SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Staff Report
Proposed Rule 1420.1 – Emissions Standard for Lead from Large Lead-Acid Battery Recycling Facilities

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BACKGROUND

The South Coast Air Quality Management District (AQMD) is responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin). By state law, the AQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all federal regulations and standards such as National Ambient Air Quality Standards (NAAQS) for the Basin [H&S Code Section 40460 (a)]. On October 15, 2008, the U.S. Environmental Protection Agency (U.S. EPA) amended both the primary and secondary NAAQS for lead from a level of 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ averaged over a rolling 3-month period, along with changes to monitoring and reporting requirements.

The purpose of Proposed Rule 1420.1 (PR 1420.1) is to propose a new rule for large lead-acid battery recycling facilities which are the highest stationary source emitters of lead in the Basin. In addition, PR 1420.1 is designed to address the amended NAAQS for lead to ensure the Basin can achieve the revised standard. Other lead-emitting sources will be addressed in a future amendment to AQMD Rule 1420 – Emission Standards for Lead.

PUBLIC PROCESS

PR 1420.1 was developed through a public process. A PR 1420.1 Working Group was formed to provide an opportunity to discuss the proposed rule in greater detail and provide input to the AQMD staff throughout the rule development process. The working group was comprised of a variety of stakeholders including representatives and consultants from the regulated industry, the DTSC and other agency representatives, environmental and community representatives, and other interested parties. A Public Workshop was also held to present the proposed rule and receive public comment. Throughout the process, comments received have been addressed in the staff report and changes made to the proposed rule where appropriate. Appendix A is a summary of comments from the Public Workshop and written comments received thus far.

LEAD

Lead is a naturally occurring metal found in the earth's crust. The metal is grayish in color and is soft, malleable, and ductile. It is also a limited electrical conductor and highly impervious to corrosion. This unique combination of physical properties has led to its many uses in industries such as construction, piping, roofing, and lead-acid storage battery manufacturing. Due to its value, some business operations are based solely on recovering lead from lead-bearing materials through secondary smelting operations.

Lead is classified as a "criteria pollutant" under the federal Clean Air Act. It is also identified as a carcinogenic toxic air contaminant (TAC) by the Office of Environmental Health Hazard Assessment (OEHHA). Chronic health effects include problems such as nervous and reproductive system disorders, neurological and respiratory damage, cognitive and behavioral changes, and hypertension. Exposure to lead can also potentially increase the risk of contracting cancer or result in other adverse health effects. Young children are especially susceptible to the

effects of environmental lead because their bodies accumulate lead more readily than do those of adults, and because they are more vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ.

ATTAINMENT STATUS WITH 2008 NAAQS

The 2008 NAAQS for lead requires that each state install and operate a network of ambient air lead monitors in order to determine attainment status with the standard. Two types of monitors are required; those that are population-based referred to as "non-source-oriented," and those that are facility-based referred to as "source-oriented." The lead attainment assessment conducted by the state of California was based on data from both sets of monitoring networks. Data values from measurements made at non-source-oriented monitors in the Basin were reviewed for years 2007 through 2009 and showed concentrations well below the new lead NAAQS. For source-oriented monitors, the lead-acid battery recycling industry demonstrated exceedances with the new standard in 2005 at monitors for one facility, and all 3-month averages from February 2008 through January 2010 at monitors for another facility. Based on this data, in October 2009 the California Air Resources Board (CARB) recommended to the U.S. EPA that the South Coast portion of Los Angeles County be designated as non-attainment for the 2008 federal lead standard based. Final designation of attainment status by the U.S. EPA is expected by October 15, 2010 and would require the Basin to be in attainment with the new NAAQS no later than five years thereafter. A State Implementation Plan (SIP), outlining the strategy to demonstrate attainment with the lead NAAQS, must also be submitted by the AQMD within 18 months of the final designation date.

AFFECTED INDUSTRY

PR 1420.1 applies to large lead-acid battery recycling facilities. There are currently two facilities within the AQMD that the proposed rule will apply to: Exide Technologies and Quemetco, Inc. Exide and Quemetco are the only large lead-acid battery recyclers in the state of California and in the western United States, with the next nearest large lead-acid battery recycling facility located in Texas. These facilities receive spent (used) lead-acid batteries and other lead-bearing materials and recycle them, recovering the lead. Lead is recycled because of its value and is primarily used to manufacture new batteries.

Over the past several years, both facilities have been the subject of several legal actions resulting from violations of AQMD rules. Violations have led to modifications of facility compliance plans, permit conditions, and in some cases, additional conditions of orders for abatement. Many of the conditions have included additional housekeeping requirements, process changes, and more stringent monitoring. In addition to air quality regulations, the two facilities are subject to other toxics requirements under the California Department of Toxic Substances Control (DTSC).

Even with the recent modifications at both facilities, monitoring data shows that additional requirements are necessary in order to meet the ambient lead standard of 0.15 $\mu g/m^3$. PR 1420.1

incorporates many of the provisions currently being implemented at affected facilities with additional safeguards to help ensure that the Basin will achieve the 2008 federal lead standard.

OVERALL APPROACH FOR PROPOSED RULE 1420.1

During the rule development process, the AQMD staff considered the following three approaches for Proposed Rule 1420.1: (1) Compliance Plan; (2) Core Requirements with No Compliance Plan; and (3) Core Requirements with a "Contingency" Compliance Plan. The three approaches were evaluated with consideration of health effects of lead, potential causes of past exceedances, complaints received, and AQMD staff experience. In addition, the AQMD staff considered whether or not each approach would afford the public an opportunity to participate and provide input. The AQMD staff selected the hybrid approach of Core Requirements with a "Contingency" Compliance Plan as it is more proactive than the other two approaches, provides regulatory certainty for the affected facilities by establishing core requirements in the proposed rule, and the "Contingency" Compliance Plan is designed to minimize and/or eliminate potential delays to implement additional measures if the facility exceeds the ambient lead standard.

PROPOSED RULE 1420.1

PR 1420.1 is designed to address lead emissions from the lead-acid battery recycling industry in order to achieve attainment with the 0.15 $\mu g/m^3$ standard by as early as 2015 based on U.S. EPA timeframes. Currently, emissions of lead from stationary sources, including lead-acid battery recycling facilities, are regulated by AQMD Rule 1420 – Emissions Standard for Lead. Rule 1420 was adopted in August 1992 and controls emissions of lead from stationary sources which use or process lead-containing materials. The rule was adopted to help ensure that facilities would not discharge emissions which would cause ambient air concentrations of lead to exceed the 1978 federal and state ambient air quality standards for lead of 1.5 $\mu g/m^3$. Rule 1420 ensures that the standard is met through requirements for emission control systems, monitoring, and good housekeeping practices.

Although lead-acid battery recycling facilities are subject to Rule 1420, separate and more stringent requirements relating to operations and processes specific to lead-acid battery recycling facilities are necessary to ensure that the new standard is met. PR 1420.1 will require large lead-acid battery recycling facilities to:

- Meet an ambient air lead concentration of 0.15 $\mu g/m^3$ averaged over any 30-day period by January 2012;
- Install total enclosures of all areas used for the processing or storage of lead-containing materials associated with lead-acid battery recycling operations;
- Vent total enclosures and all other lead emission points to control devices capable of meeting a facility total emission rate of 0.045 pounds of lead per hour from all lead point sources, and a maximum emission rate of 0.010 pounds of lead per hour for any individual lead point source;
- Install specifically rated filters/bags for lead control devices;
- Install secondary controls on dryers;

- Submit a Compliance Plan containing additional lead emission reduction measures if ambient air lead concentrations exceed 0.12 $\mu g/m^3$ averaged over any 30-day period on or after July 1, 2011;
- Conduct more stringent housekeeping practices to minimize fugitive lead-dust emissions;
- Conduct annual source testing of all lead point source control devices;
- Conduct ambient air lead monitoring; and
- Conduct recordkeeping and reporting, including public notifications, for specific maintenance activity, turnarounds, and shutdowns.

IMPACT ASSESSMENT

A socioeconomic assessment has been conducted to analyze the costs associated with compliance under PR 1420.1. PR 1420.1 impacted facilities will be required to install additional digital differential pressure monitors for total enclosures. One facility will be required to install secondary lead controls on a dryer. Additional housekeeping practices will also be required. Annual source tests will need to be conducted for all lead point source control devices to meet proposed emission standards. The total annual cost for both facilities to comply with PR 1420.1 is estimated at $0.41 million for the first year, and $0.32 million annually thereafter.

Pursuant to California Environmental Quality Act Guidelines §15252 and AQMD Rule 110, the AQMD has prepared an Environmental Assessment for PR 1420.1. The Draft Environmental Assessment was released for a 30-day public review and comment period beginning April 27, 2010 and ending May 26, 2010. No comments were received.

CHAPTER 1: BACKGROUND

INTRODUCTION

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INTRODUCTION

PR 1420.1 addresses exposure to lead emissions from lead-acid battery recycling facilities. The purpose of the proposed rule is to protect public health and help ensure attainment with the amended lead NAAQS. As required by the federal Clean Air Act, the U.S. EPA periodically reviews the standard to determine if changes are warranted. Based on review of health studies, the U.S. EPA has determined that the standard of 1.5 $\mu g/m^3$ set in 1978 was not sufficient to protect public health and welfare with an adequate margin of safety. The standard has been lowered to 0.15 $\mu g/m^3$ based on studies that demonstrate health effects at much lower levels of lead exposure than previously believed. The new standard provides increased protection for children and other at-risk populations against an array of health effects, most notably neurological effects in children, including neurocognitive and neurobehavioral effects.

The lead-acid battery recycling industry has been determined by AQMD staff to be the highest stationary source emitters of lead in the Basin. Staff's analysis has also shown this industry to be the only known source category that currently demonstrates ambient air lead concentration measurements that cause non-attainment with the new lead NAAQS. PR 1420.1 is in addition to Rule 1420 – Emissions Standard for Lead which addresses lead emissions from any stationary source that uses or processes lead-containing material. Rule 1420 applies to all non-vehicular lead sources and currently implements the existing lead NAAQS. Although Rule 1420 also applies to lead-acid battery recycling facilities, it does not contain specific and adequate control measures for this source category to minimize lead emission exposure such that ambient air lead concentrations will comply with the new lead NAAQS. Other lead-emitting sources in the Basin will be further analyzed and addressed in a future amendment to Rule 1420.

PUBLIC PROCESS

PR 1420.1 was developed through a public process. A PR 1420.1 Working Group was formed to provide an opportunity to discuss the proposed rule in greater detail and provide input to the AQMD staff throughout the rule development process. The working group was comprised of a variety of stakeholders including representatives and consultants for the regulated industry; the DTSC and other agency representatives; environmental and community representatives; and other interested parties who met with AQMD staff to discuss elements of the proposed rule in more detail. The Working Group met three times during the rule development process, on April 22, 2010, May 18, 2010, and August 24, 2010.

In addition, a Public Workshop was held on April 14, 2010 to present the proposed rule and receive public comment. PR 1420.1 progress reports and updates to the AQMD Governing Board's Stationary Source Committee, Environmental Justice Advisory Group, and Local Government and Small Business Assistance Advisory Group provided additional opportunities for public comment. Based on comments received at the Stationary Source Committee from residents and community representatives from the City of Commerce, Boyle Heights, and Maywood, the AQMD staff held a meeting with representatives of East Yard Communities for Environmental Justice to brief them on the proposed rule and receive additional input. The meeting was held at their offices in the City of Commerce which is near one of the lead-acid

battery recycling facilities. Throughout the process, comments received have been addressed in the staff report and changes made to the proposed rule where appropriate. Appendix A is a summary of comments from the Public Workshop and written comments received thus far.

HEALTH EFFECTS OF LEAD

Human exposure to lead occurs in a variety of ways with common routes being that of inhalation and ingestion. Ingestion of lead-containing paint chips and soil with deposited atmospheric lead is a source of concern for exposure for children. The most widely used indicator of lead exposure in many studies is the amount of lead measured in whole blood because of the direct relationship with blood lead (PbB) levels and health effects. Clinical effects resulting from high-level lead exposure include nervous and reproductive system disorders, neurological and physical developmental effects, cognitive and behavioral changes, and hypertension. Young children are especially susceptible to the effects of environmental lead because they are more vulnerable to certain biological effects of lead including learning disabilities, deficits in IQ, and behavioral problems.[1] Health & Safety Code Section 39669.5, "Special Provisions for Infants and Children," required CARB to identify up to five TACs that may cause infants and children to be especially susceptible to illness. The "Prioritization of Toxic Air Contaminants Under the Children's Environmental Health Protection Act" document released in 2001 by the Office of Environmental Health Hazard Assessment (OEHHA) lists lead as one of the original five toxic air contaminants.

Lead is classified as a probable human carcinogen by both the International Agency for Research on Cancer and the U.S. EPA. OEHHA classified lead as a carcinogenic toxic air contaminant and it was added to the AQMD Rule 1401 list of TACs in 1992. AQMD's "Risk Assessment Procedures for Rules 1401 and 212" Tier 1 screening value for lead indicates that a lifetime exposure (70 years for residential and sensitive receptors, 40 years for worker receptors) to 0.628 pounds of lead a year at 25 meters could potentially cause one additional case of cancer out of a one million population.

Under the federal Clean Air Act, lead is classified as a "criteria pollutant." Lead has observed health effects at ambient concentrations. The U.S. EPA has thoroughly reviewed the lead exposure and health effects research, and has prepared substantial documentation in the form of a Criteria Document to support the selection of the 2008 NAAQS for lead. The Criteria Document used for the development of the 2008 NAAQS for lead states that studies and evidence strongly substantiate that PbB concentrations in a range of 5-10 µg/dL, or possibly lower, could likely result in neurocognitive effects in children. The report further states that "there is no level of lead exposure that can yet be identified with confidence, as clearly not being associated with some risk of deleterious health effects."[2]

[1] Environmental Protection Agency, "Lead in Air," (*http://www.epa.gov/air/lead/health.html*), June 12, 2009.

[2] Environmental Protection Agency, Office of Research and Development, "Air Quality Criteria Document for Lead, Volumes I-II," October 2006.

Based on studies conducted by the Clean Air Scientific Advisory Committee (CASAC), it was concluded that a "population loss of 1-2 IQ points" resulting from exposure to ambient air lead concentrations "is highly significant from a public health perspective." The U.S. EPA has determined that a primary and secondary standard of 0.15 $\mu g/m^3$ is requisite to provide an adequate margin of safety that would ensure the protection of public health and the environment regarding the aforementioned population IQ loss and other health effects from lead exposure.[3]

There have been several health studies conducted in communities around Quemetco, Inc. (Quemetco), located in the City of Industry. In 1994, the Los Angeles County Department of Health Services (DHS) conducted studies on the impact of lead emissions from Quemetco on PbB levels of children living in a nearby community and in 2002, the DHS conducted lead testing for students and community members within one mile of Quemetco. Although the results of the studies revealed that no detectable differences in PbB levels were exhibited in nearby communities when compared to a control community, soil lead levels were found to be higher. It should be noted that the distance between the nearest resident and lead emitting stack at the facility is approximately 700 feet. In 2002, the DHS conducted lead testing for students and community members within one mile of Quemetco. Of 169 children and 75 adults that were tested, one adult exhibited increased PbB levels which were attributed to occupational exposure. The Keck Cancer Surveillance Program of University of Southern California conducted an analysis of 1972-1999 census data and determined that there was no causal link between cancer and residential proximity to Quemetco. Although these studies have not shown significant health impacts due to proximity to a lead-acid battery recycler, increased levels of lead found in soils can potentially cause health problems if ingested.

REGULATORY HISTORY

Lead-acid battery recyclers have been subject to regulation for more than two decades. Below is a chronology of regulatory activity:

- In November 1970, CARB set the state ambient air quality standard for lead at 1.5 $\mu g/m^3$ averaged over 30 days.
- In October 1978, the U.S. EPA adopted the NAAQS for lead requiring attainment with a lead ambient concentration of 1.5 $\mu g/m^3$ averaged over a calendar quarter.
- In September 1992, the AQMD adopted Rule 1420 – Emissions Standard for Lead. The rule incorporated the state ambient air quality standard and required control devices on lead emission points, control efficiency requirements for lead control devices, housekeeping, and monitoring or modeling of ambient air quality.
- In October 1992, OEHHA classified lead as a carcinogenic toxic air contaminant and assigned to it a cancer potency factor and a cancer unit risk factor.
- In January 1993, CARB adopted the Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting. The state regulation required control

[3] Environmental Protection Agency, "National Ambient Air Quality Standards for Lead; Final Rule," 40 CFR Parts 50, 51, 53, and 58, November 2008.

devices for lead and other toxic metal emission points, control efficiency requirements for control devices, fugitive emission control, and recordkeeping.

- In June 1997, the U.S. EPA adopted the National Emissions Standards for Hazardous Air Pollutants (NESHAP) from Secondary Lead Smelting. The federal regulation required lead emission concentration limits of lead control devices, control of process fugitive emissions, monitoring, recordkeeping, and reporting.
- On October 15, 2008, the U.S. EPA signed into legislation an amended NAAQS for lead of 0.15 $\mu g/m^3$.

The following provides additional background information about Rule 1420 and the 2008 NAAQS for lead.

Rule 1420

Rule 1420 was adopted in September 1992 and has not been amended since its adoption. Rule 1420 applies to facilities that process or use lead-containing materials which includes, but is not limited to, primary or secondary lead smelters, foundries, lead-acid battery manufacturers or recyclers, and lead-oxide, brass and bronze producers. Rule 1420 is based on the current state ambient air quality standard of 1.5 $\mu g/m^3$ averaged over a 30-day period. The rule includes requirements for point source controls, monitoring, sampling, recordkeeping, and reporting. Rule 1420 requires facilities that process more than two tons of lead per year to submit a Compliance Plan that provides information on how the facility will conduct monitoring, air dispersion modeling, and implement requirements to install and implement point source controls.

2008 NAAQS for Lead

Since U.S. EPA established the initial standard of 1.5 $\mu g/m^3$ in 1978, scientific evidence about lead and health has expanded dramatically. More than 6,000 new studies on lead health effects, environmental effects, and lead in the air have been published since 1990. Evidence from health studies shows that adverse effects occur at much lower levels of lead in the blood than previously thought. As a result, U.S. EPA amended the NAAQS for lead which now reduces the ambient air quality standard from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$. The 2008 lead NAAQS requires full attainment by each state no later than five years after final designations for attainment status are made. Demonstration of attainment is based on measurements using a rolling 3-month averaging form to be evaluated over a 3-year period. Measurements are to be determined by U.S. EPA-required monitoring networks within each state which consist of both source-oriented and non-source-oriented monitors. The AQMD has already established the required monitoring network for both source and non-source-oriented lead monitors.

ATTAINMENT STATUS WITH 2008 NAAQS

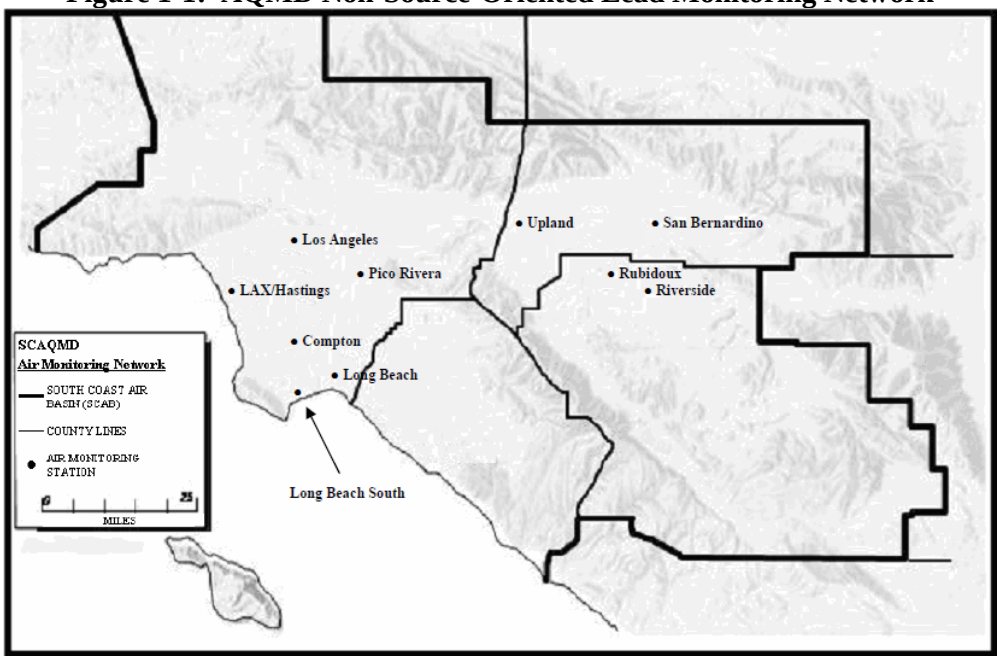
The 2008 NAAQS for lead requires that each state install and operate a network of ambient air lead monitors in order to determine attainment status with the standard. Two types of monitors are required; those that are population-based referred to as "non-source-oriented," and those that are facility-based referred to as "source-oriented." The lead attainment assessment conducted by the state of California was based on data from both sets of monitoring networks. CARB recommended to the U.S. EPA that the South Coast portion of Los Angeles County be designated

as non-attainment for the 2008 federal lead standard based on data from the ATSF and Rehrig-Pacific Street monitors for Exide Technologies (Exide) as discussed in more detail below. Final designation of attainment status by the U.S. EPA is expected by October 15, 2010 and would require the Basin to be in attainment with the new NAAQS no later than five years thereafter. A State Implementation Plan (SIP), outlining the strategy to demonstrate attainment with the lead NAAQS, must also be submitted by the AQMD within 18 months of the final designation date. Details pertaining to the monitors and data used for the assessment are explained below.

Non-Source-Oriented Monitors

The AQMD currently operates a non-source-oriented monitoring network of 10 locations throughout the Basin. The spatial distribution of these sites is shown below in Figure 1-1. The AQMD's current lead monitoring network meets the minimum requirements for the U.S. EPA non-source-oriented monitoring network as specified in the new lead NAAQS, therefore data from the existing monitors were used to provide an indication of lead attainment status on a regional scale. Data values from measurements made at non-source-oriented monitors in the Basin were reviewed for years 2007 through 2009 and showed concentrations well below the new lead NAAQS of 0.15 $\mu g/m^3$ and range from 0.01 $\mu g/m^3$ to 0.03 $\mu g/m^3$.

Figure 1-1: AQMD Non-Source-Oriented Lead Monitoring Network

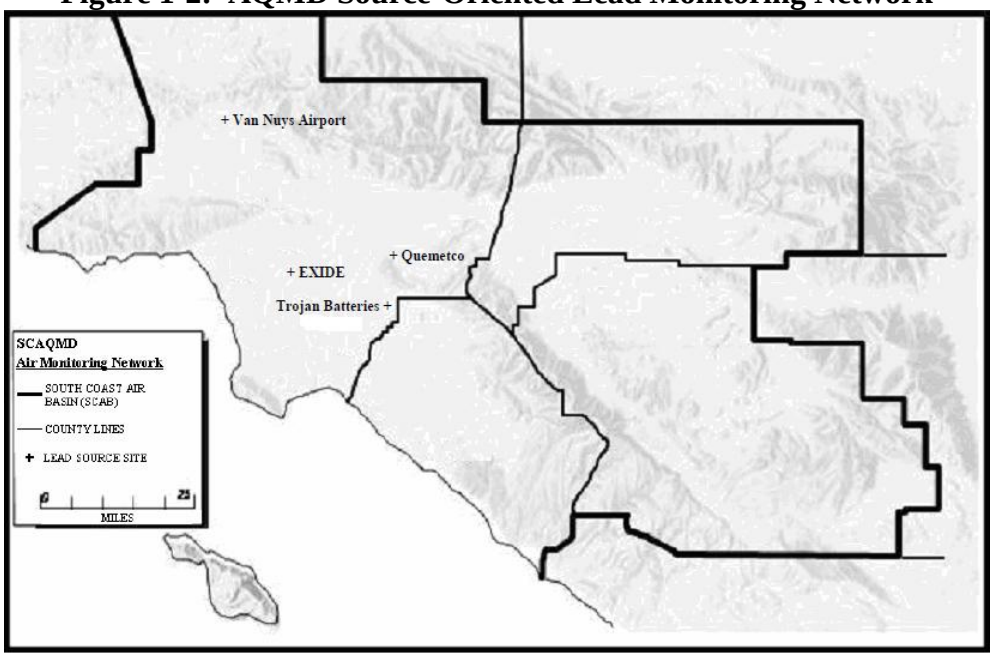


Source-Oriented Monitors

40 CFR Part 58, Appendix D, Paragraph 4.5 requires installation of source-oriented monitors at lead sources that are expected to or have been shown to contribute to violations of the lead NAAQS. The U.S. EPA requires agencies to have, at a minimum, one source-oriented State and Local Air Monitoring Station (SLAMS) site located at each lead source with lead emissions of 1.0 or more tons/year. The monitoring location is to be determined based on the modeled point of maximum impact, taking into consideration population exposure and logistical considerations.

The AQMD currently operates existing source-oriented monitoring networks at the following three facilities: Trojan Battery Company in Santa Fe Springs, Quemetco, Inc. in the City of Industry, and Exide Technologies in Vernon, and one additional network recently installed at Van Nuys Airport to meet the monitoring requirements of the new lead NAAQS. General aviation aircraft use leaded aviation fuel, and have been identified as a source of lead emissions. Although required to conduct source-oriented monitoring of this source according to U.S. EPA regulations, the AQMD currently does not have jurisdiction for regulating the aviation gas formulation or the aircraft emissions since it is a mobile source. Figure 1-2 below shows the locations of AQMD's current source-oriented monitoring networks and their respective lead sources.

Figure 1-2: AQMD Source-Oriented Lead Monitoring Network



Based on data from AER reporting years 2005 through 2007, lead emissions at Trojan Battery, a battery manufacturer located in Santa Fe Springs, are reported as 0.0145 tons/yr and sampling is conducted at one site. The site operates on a 1-in-6 day sampling schedule and had its highest monthly average of 0.23 µg/m^3 in May 2007. Since September 2007, all monthly averages have been below the new lead NAAQS with an average concentration of 0.07 µg/m^3.

At Quemetco, Inc., a lead-acid battery recycling facility located in the City of Industry, lead emissions are reported as 0.32 tons/yr and sampling is currently conducted at one site based on AER data for reporting years 2005 through 2007. Monthly averages last exceeded the concentration of 0.15 µg/m^3 in 2005 at 0.38 µg/m^3. In 2006, monthly averages ranged between 0.02 and 0.10 µg/m^3. Sampling did not take place in 2007 and most of 2008 due to loss of access to the AQMD sampling location. Monitoring resumed in October 2008 with monthly measurements through January 2010 below 0.15 µg/m^3 and a monthly average of 0.07 µg/m^3.

Based on data from AQMD's AER program for lead emissions reported from years 2005 through 2007, Exide is the only non-aviation source currently emitting over 1.0 ton/yr with an annual average of 1.5 tons/yr. Sampling is conducted at two locations with monitors identified as "Rehrig" and "ATSF". All 3-month averages for ambient air lead concentrations from February 2008 through January 2010 from the monitor located at Rehrig exceeded the new lead NAAQS of 0.15 $\mu g/m^3$. Concentrations from the ATSF monitor exceeded the new lead NAAQS for all 3-month averaging periods from February 2008 through May 2008, and September 2008 through November 2008.

RULE APPLICABILITY

PR 1420.1 will affect large lead-acid battery recycling facilities that process more than 50,000 tons of lead a year. The provisions of PR 1420.1 are in addition to Rule 1420 and the other lead sources in the district will be addressed through future rulemaking efforts. The decision to address large lead-acid battery recycling facilities was due in part to the AQMD's source-oriented monitors that have historically shown that this industry category has the potential to exceed the new lead ambient air quality standard and their annual mass emissions.

The AQMD staff analyzed multiple data sources, including AQMD's AER program for years 2005 through 2007, permitting data, and compliance data to initially identify the universe of lead-emitting sources. Approximately 600 lead sources were identified and analyzed. Almost all facilities located within the Basin emit less than 0.15 tons of lead per year, an amount far below U.S. EPA's 1.0 ton per year threshold warranting source-oriented monitoring at these facilities. Based on the AQMD's AER program between 2005 and 2007, the industry category with the largest stationary source lead emissions is lead-acid battery recycling.

AFFECTED INDUSTRY

PR 1420.1 applies to large lead-acid battery recycling facilities. There are currently two facilities within the AQMD that the proposed rule will apply to: Exide Technologies and Quemetco, Inc. Exide and Quemetco are the only large lead-acid battery recyclers in the state of California and in the western United States, with the next nearest large lead-acid battery recycling facility located in Texas. These facilities receive spent (used) lead-acid batteries and other lead-bearing materials and recycle them, recovering the lead. Approximately 98 percent of lead acid batteries in the United States are recycled and all components of the batteries are recycled, primarily lead, plastic, and acid. Through the recycling process, approximately 95 percent of the lead in the batteries is recovered. Lead is recycled because of its value and is primarily used to manufacture new batteries.

Exide is located in the city of Vernon on about 24 acres of land. Exide has the highest stationary source lead emissions in the District. Based on AER data for 2005 through 2007, Exide has an average of more than 1.5 tons of lead emission per year, with its highest annual emissions of 1.99 tons of lead per year in 2006-2007 AER reporting year. The facility has an average production of 100,000 to 120,000 tons of lead per year. This is equivalent to recycling approximately 11 million automotive batteries. The facility also recycles lead-bearing plant scrap and other lead-bearing materials.

Figure 1-3
Exide Technologies
Vernon, CA 90058

Quemetco is located in the City of Industry on approximately 14 acres of land. Based on AER data for 2005 through 2007, Quemetco has the second highest average lead emissions of 0.28 tons per year with a high of 0.32 tons per year for the 2006-2007 AER reporting year. Spent automotive batteries account for almost all of the lead processed by Quemetco. The facility processed more than 110,000 tons of lead in 2009. Quemetco processes approximately 10 million automotive batteries per year.

Figure 1-4
Quemetco, Inc.
City of Industry, CA 91746

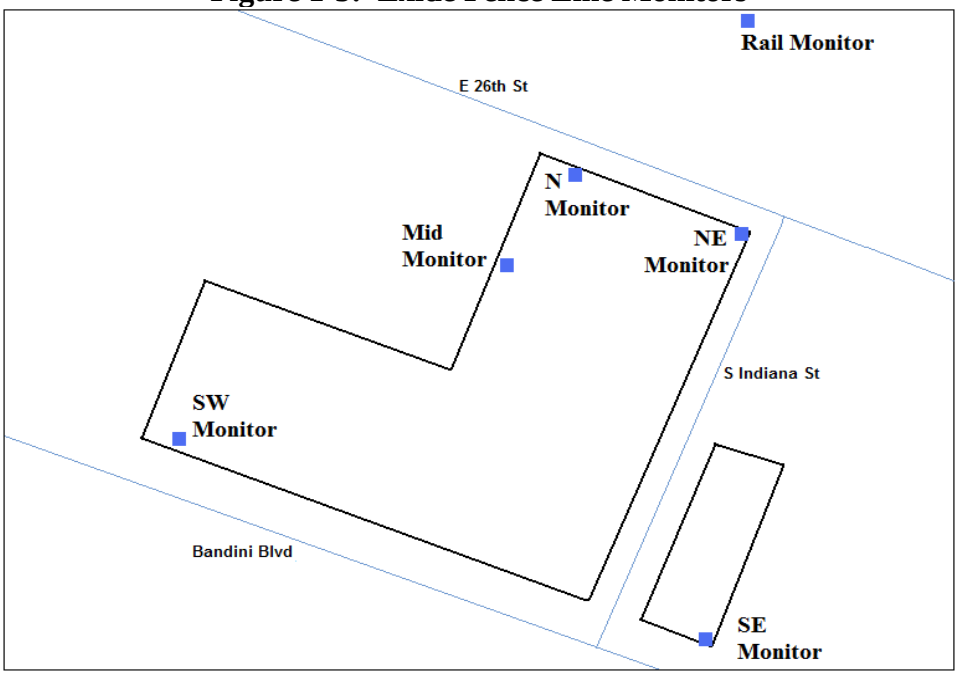
FENCE LINE MONITORS

Under Rule 1420, Exide and Quemetco are required to maintain and operate two fence line monitors to collect samples to demonstrate compliance with the Rule 1420 ambient lead standard of 1.5 µg/m^3. Each facility currently operates an ambient air monitoring and sampling network (fence line monitors) pursuant to requirements of Rule 1420. The fence line monitors are installed at locations that are based on the maximum expected ground-level concentrations of lead at or beyond the facility's property line.

Exide Fence Line Monitors

As shown in Figure 1-5 below, Exide currently maintains six fence line monitors. Exide conducts sampling at least once every three days at six monitors. The SW, SE, and Rail monitors have been in operation for over ten years. Due to exceedances of the ambient air quality standard of Rule 1420, the facility was required to modify its ambient air monitoring plan to add three additional monitors. The N and NE monitors were installed in the beginning of 2009 with the MID monitor installed at the end of 2009.

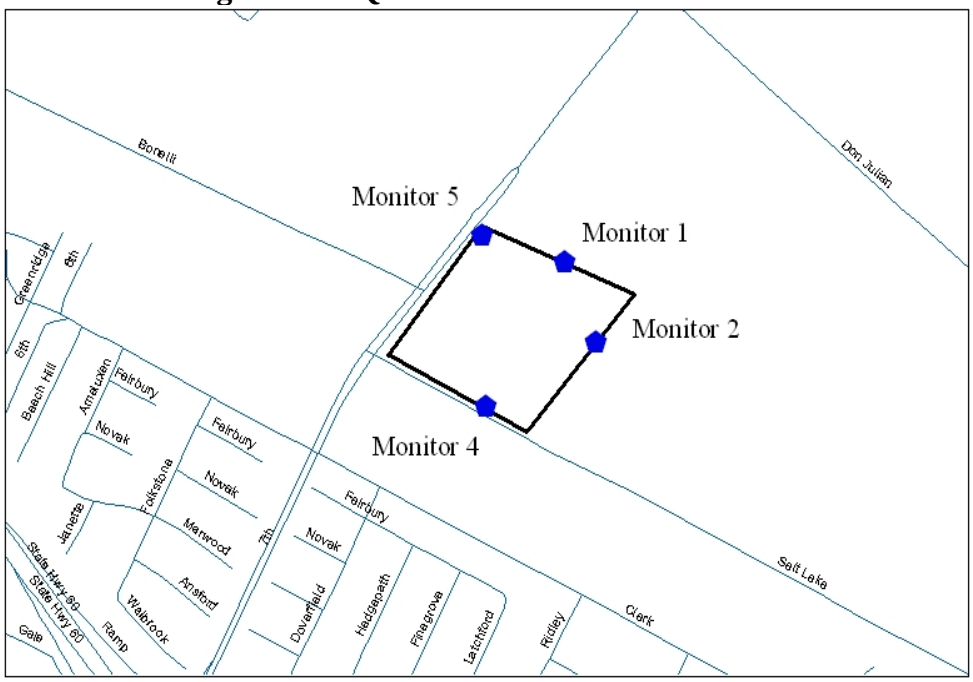
Figure 1-5: Exide Fence Line Monitors



Quemetco Fence Line Monitors

Quemetco collects daily samples at four monitors that have been in operation for over ten years. Monitor 3 was renamed Monitor 5 and moved to the northwest corner of the facility in late 2007 in response to complaints from residents requesting sampling at a location upwind from their neighborhood. Locations of fence line monitors at Quemetco are shown in Figure 1-6 below.

Figure 1-5: Quemetco Fence Line Monitors



COMPLIANCE HISTORY

The following briefly describes the compliance history for each facility with respect to the ambient air lead concentrations, complaints, and other toxic regulations.

Exide

Over the past five years, Exide has been required to increase their fence line monitors and implement changes within their facility to reduce lead emissions. In 2004, the AQMD began receiving complaints from neighbors and the surrounding community which prompted installation of additional monitors. In 2007, the AQMD installed an additional monitor at the Rehrig facility. During 2007-2008, lead concentrations from the Rehrig monitor exceeded the Rule 1420 lead standard of 1.5 µg/m^3. This led to extensive revisions to Exide's Rule 1420 Compliance Plan and issuance of an Order for Abatement in 2009. The AQMD staff continues to work with Exide to ensure all measures in the Compliance Plan and Order for Abatement are being implemented. A brief chronology is described below.

- November 2007: AQMD installs additional monitor at Rehrig facility next to Exide based on complaints alleging Exide as a source of dust, smoke, and odors.
- December 2007 – April 2008: Exide exceeded the ambient air lead concentration requirement of Rule 1420. Monthly averages during this time range from 2.0 to 2.9 µg/m^3.
- 2008: AQMD revised Exide's Compliance Plan to include upgrades to lead control devices, additional housekeeping, extensive housekeeping requirements including

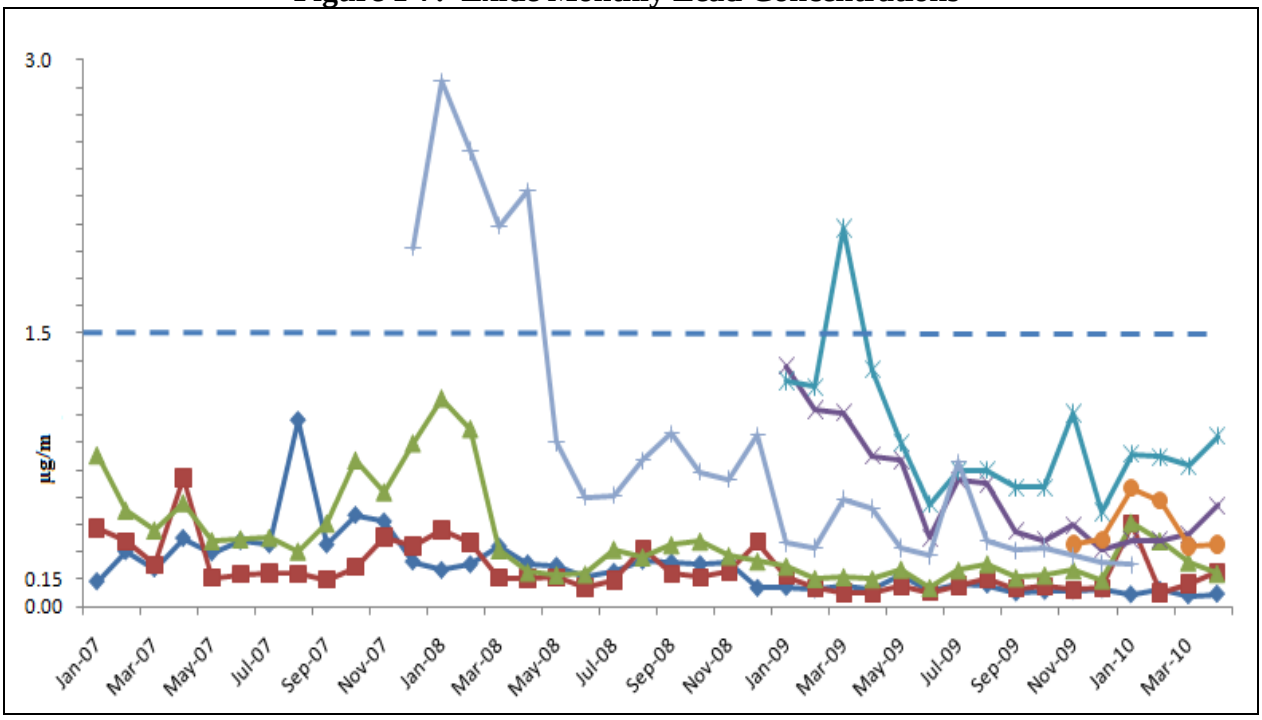
building roof tops and perimeter sidewalks and public roadways, and expanded ambient air monitoring.

- January 2009: AQMD staff required two more fence line monitors at Exide.
- December 2009: AQMD staff required one more fence line monitor at Exide.
- June 2009: AQMD issued an Order for Abatement which included further, more stringent requirements beyond those specified in Rule 1420 and existing permit and Compliance Plan conditions. Requirements included total enclosures of two lead processing areas, lead control device upgrades, process curtailments if ambient concentrations approached or exceeded the lead standard, and additional housekeeping and monitoring requirements.

Monthly Lead Concentrations at Exide

Average monthly lead concentrations for all fence line monitors at Exide from 2007 to the beginning of 2010 are 0.47 µg/m^3 with a high of 2.08 µg/m^3. Average monthly concentrations from source-oriented monitors for Exide to date are 0.99 µg/m^3 with a high of 2.88 µg/m^3. Exide received multiple violations for exceedances with the 1.5 µg/m^3 concentration standard of Rule 1420 between December 2007 and June 2008 at a source-oriented monitor, including a violation in March 2009 for an exceedance measured at a fence line monitor. Figure 1-7 below shows Exide monthly lead concentrations at each monitor from 2007 to the beginning of 2010.

Figure 1-7: Exide Monthly Lead Concentrations



Quemetco

From 2000 to 2001, Quemetco was issued violations by the AQMD for exceeding the Rule 1420 ambient air lead concentration standard of 1.5 µg/m^3. As a result, Quemetco was required to

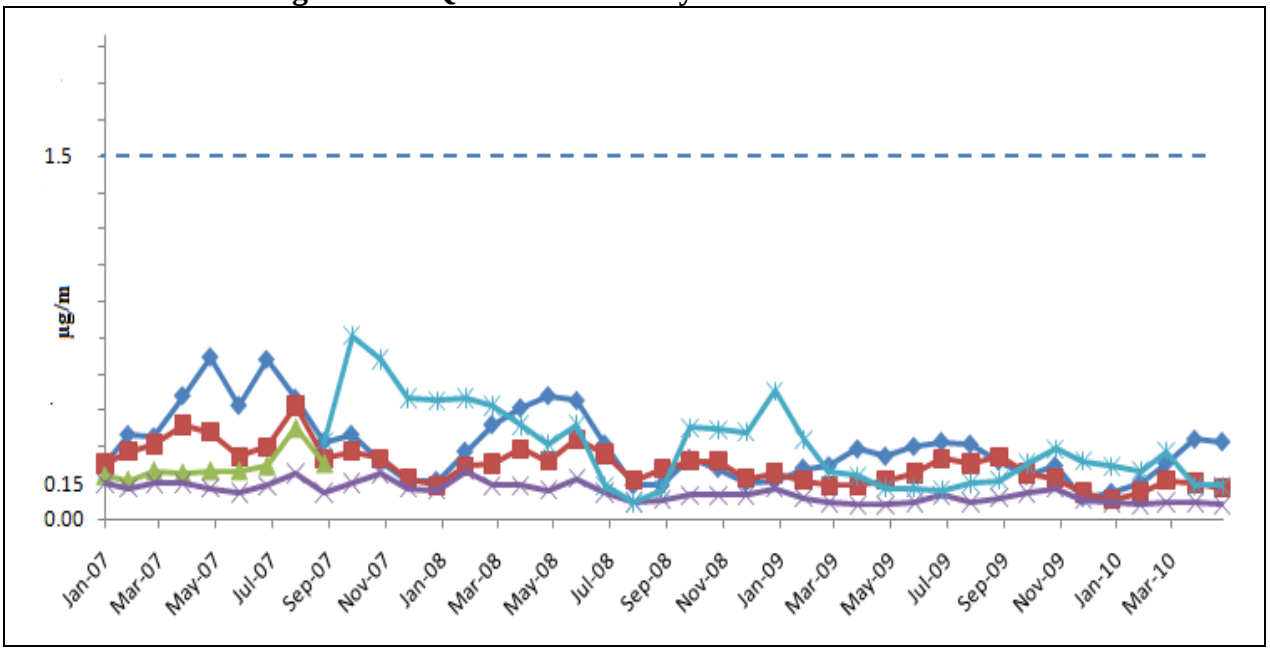
modify conditions of their Rule 1420 Compliance Plan and reduce charging limits on furnaces used in their lead smelting process.

In 2000, Quemetco submitted a health risk assessment (HRA) approved by the District in 2005, showing that the maximum cancer risk for the facility was 22 in one million, primarily from arsenic and 1,3-butadiene emissions, and that the cancer burden was 1.15. Under Rule 1402, the facility was required to perform public notice and hold a public meeting because the cancer risk exceeded 10 in one million, and was required to reduce risk because the cancer burden exceeded 0.5. In order to reduce the health risk, Quemetco installed a wet electrostatic precipitator (WESP) to control particulate and metal emissions and regenerative thermal oxidation (RTO) to control organic emissions. Following installation of controls and subsequent emissions testing, their approved HRA from February 2010 shows a maximum cancer risk of 4.4 in one million and a cancer burden of 0.023. Average monthly ambient air lead concentration readings at the facility fence line monitors have also been reduced by 40% after control upgrades were made at the facility.

Monthly Lead Concentrations at Quemetco

Average monthly lead concentrations for all fence line monitors at Quemetco from 2007 until the middle of 2008 were 0.29 µg/m^3 with a high of 0.76 µg/m^3. After installation of the WESP in the third quarter of 2008, average concentrations to date have dropped to an average of 0.18 µg/m^3. Although the facility is still above the ambient air lead concentration requirement of the proposed rule, it is expected that completion of the total enclosure for the battery breaking area and additional housekeeping measures to be implemented at the facility will decrease ambient concentrations levels of lead required for compliance. Figure 1-8 below shows fence line average monthly lead concentrations at each monitor for Quemetco between 2007 and 2010.

Figure 1-8: Quemetco Monthly Lead Concentrations



PROCESS DESCRIPTION AND LEAD EMISSION POINTS

Lead-acid battery recycling facilities are secondary lead smelting operations where spent lead-acid batteries, mostly automotive, and other lead-bearing materials are received from various sources and processed to recover lead, plastics, and acids. The process mainly involves the sorting, melting, and refining of lead-acid batteries, which ultimately produces lead ingots that are then sold to other entities. Emission points consist of those from lead point sources and fugitive lead-dust emissions. Lead point source emissions are generally discharged as the main exhaust of the battery breaking process, smelting furnaces, and refining kettles and vented through ductwork or a stack. Fugitive lead-dust emissions are from facility roadways subject to wind, vehicular, or foot traffic, materials handling and storage areas, battery breaking areas, and smelting and refining areas. Below is a general description of the process including potential lead emission points:

I. <u>Phase I – Raw Materials Processing</u>: Lead-bearing materials recovered from lead-acid batteries are prepared and processed prior to being charged (loaded) to a smelting furnace. Lead point source emissions may result during the crushing process of lead-acid batteries. Fugitive lead-dust emissions may result from areas surrounding the crushing process and from the handling and transporting of lead-bearing materials.

a. **Receiving and Storage:** Spent lead-acid batteries are usually received on pallets that are either stored or sent directly to conveyors for immediate crushing.

b. **Battery Breaking/Crushing:** The spent lead-acid batteries are unloaded from conveyors and loaded into a hammer mill system where they are crushed whole. The crushed material is then placed into a series of tanks filled with water in order to clean materials of the acids. Through gravity separation, the crushed material sinks to the bottom of the tanks and goes through a series of screens to further isolate lead-bearing materials. The materials are then typically stored in open or partially covered piles if not required for immediate charge preparation.

c. **Charge Preparation/Rotary Drying/Sweating**: Recovered lead-bearing materials are prepared by blending them with stored lead scrap and reagents prior to being charged to a furnace. The metallic scrap materials are placed in dryers to remove moisture prior to charging to a furnace in order to reduce furnace upsets (puffs and explosions). The materials are then sweated (subjected to temperatures above the melting temperature of lead, but below that of the other metals) to separate lead from other metals with higher melting points.

II. <u>Phase II – Smelting:</u> Smelting is the production of crude lead by melting and separating the lead from metallic and non-metallic contaminants and by reducing oxides to elemental lead. Smelting is carried out in blast, reverberatory, and rotary kiln furnaces. These furnaces emit high levels of lead point source emission from the lead fumes during the charging and tapping processes. Fugitive lead-dust may result during the handling of the charged materials and surrounding areas.

a. **Blast furnaces**: Typically, "hard" lead, or antimonial lead (containing ~10% antimony) is produced in blast furnaces. Scrap metal, re-run slag, scrap iron, coke, recycled dross, flue dust, and limestone are used as charge materials to the furnace. Process heat is produced by the reaction of the charged coke with blast air that is blown into the furnace.

b. **Reverberatory furnaces**: Semi-soft lead (containing ~3-4% antimony) is produced in reverberatory furnaces. Lead scrap, metallic battery parts, oxides, dross, and other residues are used as charge materials to the furnace. The charge materials are heated directly using natural gas, oil, or coal.

III. **Phase III – Refining and Casting:** Refining and casting the crude lead from the smelting process can consist of softening, alloying, and oxidation, depending on the degree of purity or alloy type desired. Crude lead produced during smelting operations is remelted and refined by the addition of reagents, such as sulfur and caustic soda. The purified lead is then cast into molds or ingots. Refining furnaces and kettles are typically gas or oil-fired and maintained at operating temperatures between 600-1300 degrees F. Both lead point source and fugitive lead-dust emissions result from lead fumes that may be emitted when molten lead is transferred to refining kettles and lead particulates may become airborne off refining kettle surfaces due to updrafts created by thermal rise.

a. **Alloying furnaces:** Alloying furnaces are kettle furnaces used to simply melt and mix ingots of lead and alloy materials, such as antimony, tin, arsenic, copper, and nickel.

b. **Refining furnaces**: Refining furnaces are used to either remove copper and antimony for soft lead production, or to remove arsenic, copper, and nickel for hard lead production. Sulfur may be added to the molten lead to remove copper. The resultant copper sulfide is skimmed off as dross and may be processed in a blast furnace to recover residual lead. Aluminum chloride is used to remove copper, antimony, and nickel.

c. **Oxidizing furnaces:** Either kettle or reverberatory units are used to oxidize lead and to entrain the product lead oxides in the combustion air stream for subsequent recovery in high-efficiency baghouses.

CONTROL STRATEGIES

Several types of controls for lead emissions are currently used at the lead-acid battery recycling facilities in the Basin. Lead emissions at lead-acid battery recycling facilities are generally categorized as point and fugitive lead emissions. Point source emissions are those emissions that are vented to a stack where the stack can be from a specific piece of equipment such as a furnace or building. Fugitive emissions are particulate matter that contain lead, is in contact with the ambient air, and can become airborne. Point source emissions that are vented through a control

device, but not captured and contained can become fugitive emissions. The following discusses lead point source controls and fugitive source control strategies.

Lead Point Source Control Strategies

The following describes lead point source control strategies. As with any type of control device, maintenance and proper operation of the control device are important to ensure the control device can achieve its maximum control efficiency. The following provides a description of baghouses and filter controls, wet scrubbers, high efficiency particulate arrestors (HEPA), electrostatic precipitators and wet electrostatic precipitators. Use of multistage point source controls such as use of baghouse filters and HEPA filters can improve the capture efficiency and provide additional protection. Lead emissions from lead processes discussed in the previous section are vented to one or more lead control devices listed below:

Baghouses and Filters

Baghouses operate by collecting particles on a fabric filter. Typically, they consist of fabric bags of tubular or envelope shapes. As an air stream flows through the bags, small particles are initially captured and retained on the fabric filter by one or a combination of the following collection mechanisms: impaction, direct interception, diffusion, electrostatic attraction, and gravitational settling. Once dust has accumulated on the walls of the bags, the "dust mat" acts as a sleeve to further increase particulate matter capture. Bags of polytetrafluoroethylene membrane-type are currently considered to be the most effective for the control of lead emissions.

Arrays of filters are also used to collect particulate matter. They can be used after the bags in a baghouse to further reduce emissions or can be used alone as in a spray booth. Filters are often used in combination with a pre-filter which is "changed out" on a regular basis allowing the bank of filter cartridges to last longer. HEPA and cartridge-type filters are currently the most effective filters used in the lead-acid battery recycling industry.

Baghouses are commonly used in metal melting operations. They have one of the highest control efficiencies for particulate emissions, and the captured particulate can be recycled to recover metal. Operating parameters of melting operations, such as exhaust stream temperature, gas stream velocity, and particulate chemical properties must be taken into account when designing the baghouse.

Daily maintenance and monitoring of the baghouse is necessary to ensure that it continuously meets the required standard of efficiency. Gas volume, temperature, pressure drop, and dust load are monitored continuously or intermittently. Baghouse shaking and sending pulses of air backwards through the bags is done at specific intervals, or when the bags are overloaded, to remove the captured particulate matter from the bags and drop it into a hopper below the bags.

Baghouse and filter technology combined can achieve an overall particulate matter capture efficiency certifiable up to 99.97 percent. It is important that baghouses are designed and use parts, bags, and filters according to manufacturer's recommendations in order to achieve optimal performance and control of emissions. The well designed baghouse can control 99 percent of particulate emissions. The capture efficiency of lead particulates is anticipated to be slightly

lower, since metals are found in greater amounts on smaller particles. The lead removal efficiency is at least 98 percent for a baghouse with 99 percent efficiency for particulates. Demonstrated removal efficiencies may be improved with the addition of secondary controls or several baghouses in series. Secondary controls also serve as a back-up or fail safe for the control of lead emissions in the event that lead control devices upstream are not properly maintained or encounter breakdowns or malfunctions, resulting in leaks or complete failure to filters or bags.

All facilities subject to this rule would be able to use baghouses or filter systems to control particulate lead emissions from most all operations in the lead-acid battery recycling processes. Examples include lead emissions coming from the battery breaking areas and all smelting, refining, and casting operations.

Wet Scrubbers

Wet scrubbers remove both particulate matter and gases from industrial process gas streams. In lead-acid battery recycling operations, wet scrubbers are typically used to remove residual lead particulates and sulfur oxides from the exhaust of baghouses that control emissions from rotary dryers and smelting furnaces. There are a variety of scrubber designs. However, only a limited number can remove small particulates from an exhaust stream. Wet scrubbers are capable of 98 percent collection efficiencies for particles as small as 5 microns in size. Two scrubbers designed to remove small particulates are the ionizing wet scrubber and the venturi scrubber.

In an ionizing wet scrubber, the gas stream first enters a chamber where a high voltage is used to ionize the gas stream. The second chamber is a wet scrubbing chamber, where the ionized particles and gases are attracted to the surface of the chamber and the scrubbing liquid. Larger size particles are removed by water through inertial impaction.

Venturi scrubbers are used by some facilities in the District. In these scrubbers, the exhaust stream is passed through a constriction (the venturi) where the scrubbing liquid is sprayed in. The turbulence at and after the venturi promotes contact of particles with the scrubbing liquid droplets. High particulate matter removal efficiencies for small particles can be achieved with this type of scrubber.

High-Efficiency Particulate Arrestors (HEPA)

Used in conjunction with a pre-filter, high-efficiency particulate air filters can trap particles as small as 0.3 µm at an efficiency of 99.97 percent or greater. Like cartridge filters, HEPA filter elements are of pleated construction. HEPA filters are generally limited to ambient temperature (100^{o}F), though special applications for higher temperatures are available. Unlike bags or cartridge filters, HEPA filters are not automatically cleaned. When a HEPA filter element becomes loaded with particulate matter such as lead particles, the element is changed out and disposed of as hazardous waste. Filters can be combined or applied to controls such as baghouses to reduce lead emissions from lower temperature exhaust streams and fugitive lead-dust emissions collected within total enclosures. They can also be utilized in negative air equipment or vacuums used to conduct housekeeping activities throughout the facility.

Electrostatic Precipitators/Wet Electrostatic Precipitators

Electrostatic precipitators operate by charging the effluent particulate matter with a highly ionized gas stream and then attracting the charged particles to an oppositely charged metal wall. Typically, a cylindrical metal tube is used with an ionized wire running through it. As the ions move outward toward the oppositely charged cylinder, the particles are also ionized, and are deposited on the cylinder. The cylinder wall is periodically vibrated to collect particulate matter into a hopper. This technology can achieve 99 percent efficiency for total particulate matter as small as 1 µm. Electrostatic precipitators in lead-acid battery recycling operations are typically used downstream from other lead controls such as baghouses, and treat exhaust streams with smaller lead particulates.

Fugitive Lead-Dust Control

Fugitive lead-dust at lead-acid battery recycling facilities can be a major source of lead emissions. Fugitive lead-dust accumulates in and around process areas, from lead point sources, on roof tops, in and around facility, and during maintenance operations to name a few. There are a variety of housekeeping and containment strategies that can be implemented to minimize fugitive lead dust. Housekeeping activities must be implemented frequently and properly to ensure they are effective. The concept behind many of these strategies is to either contain or remove lead dust so it cannot become airborne. Housekeeping practices specifying adequate frequencies and locations for all cleanings to be performed are also critical in the effectiveness to control fugitive lead-dust emissions. The following summarizes some potential fugitive lead dust control strategies:

- Pave roadways subject to vehicular and foot traffic;
- Clean paved areas through vacuuming, vacuum sweepers, and use of wet suppression;
- Wet wash or vacuum areas where lead particulate and accumulate such as roof tops, areas where lead-containing wastes are stored or disposed of;
- Clean areas where lead dust may accumulate due to accidents, process upsets or equipment malfunctions;
- Clean surface impoundments ponds before lead-containing sludge dries and can become a source of fugitive lead-dust;
- Use of enclosures or containment areas during maintenance activities or storage of lead-containing materials; and
- Use of total enclosures under negative air pressure vented to point lead point source controls to ensure that lead dust that accumulates in and around process areas does not become fugitive.

CHAPTER 2: SUMMARY OF PROPOSED RULE 1420.1

OVERVIEW

OVERALL APPROACH

PROPOSED RULE 1420.1

OVERVIEW

PR 1420.1 will address lead emissions produced by lead-acid battery recycling facilities. In addition to protecting public health, the major impetus for the rule is to establish requirements that will help ensure that the Basin meets attainment status with the 2008 NAAQS for lead. As a result, the rule proposes standards for total facility mass lead emission rates, maximum lead emission rates for lead control devices, secondary lead control devices on dryers, and concentrations for ambient air lead levels resulting from the facility. Fugitive lead emissions are addressed through housekeeping and maintenance activity requirements, and total enclosures of process areas used in the lead-acid battery recycling operation. Additionally, source testing, ambient air concentration monitoring, and recordkeeping requirements have been added to ensure continuous compliance.

OVERALL APPROACH

Rule Approach

During the rule development process, the AQMD staff considered the following three approaches for Proposed Rule 1420.1: (1) Compliance Plan; (2) Core Requirements with No Compliance Plan; and (3) Core Requirements with a "Contingency" Compliance Plan. The three approaches were evaluated with consideration of health effects of lead, past experience with affected facilities considering potential causes of past exceedances, complaints received, and AQMD staff experience. In addition, the AQMD staff considered whether or not each approach would afford the public an opportunity to participate and provide input. The following describes the three approaches and discusses why the third approach for PR 1420.1 was selected.

Compliance Plan Approach

The Compliance Plan approach is based on an approach similar to Rule 1420. The proposed rule facilities would be required to submit and implement a compliance plan and meet a lead ambient air quality standard of 0.15ug/m^3. Past experience with Rule 1420 shows that compliance plan approaches are not sufficient to demonstrate compliance with the lead ambient air quality standard. Moreover, with the more stringent lead standard, even greater assurances in the specificity of the control measures are needed. Strictly relying on an individual facility-specific compliance plan provides the facility with less regulatory certainty of the types of control measures that must be included. In addition, there are potential delays to develop, approve and implement a compliance plan. Compliance plans are generally developed between the affected facility and the AQMD staff with limited to no public process in the plan approval. As a result, the AQMD staff did not pursue this approach for the proposed rule.

Core Requirements with No Compliance Plan Approach

The Core Requirements with No Compliance Plan approach would establish core requirements that would be included in the proposed rule for point and fugitive sources, similar to PR 1420.1. Establishing core requirements in the proposed rule provides regulatory certainty for affected facilities of the key required controls for point sources and housekeeping requirements. This approach also allows public input during the development of core requirements. Under this approach, facilities would be required to implement the core requirements and meet an

established lead ambient air quality standard of 0.15 ug/m^3. If facilities exceeded the lead ambient air quality standard, legal remedies would be implemented. In the event that the standard is exceeded, there can be delays in requiring additional measures to ensure future compliance.

Core Requirements with a "Contingency" Compliance Plan Approach

The third approach is a hybrid approach between the first and second approaches. This approach is similar to the second approach but includes a "Contingency" Compliance Plan that would be submitted if the facility approaches the lead ambient air quality standard, and would only be implemented if the facility exceeded the ambient lead standard of 0.15 ug/m^3. The AQMD staff believes that the Compliance Plan element is needed to ensure that measures can be identified prior to exceeding the 0.15 ug/m^3 standard and are ready to begin implementation if the 0.15 ug/m^3 standard is exceeded. This approach provides greater assurance that the ambient lead standard will be achieved, and additional measures are in place if needed. The AQMD staff selected this approach as it is more proactive than the other two approaches, provides regulatory certainty for the affected facilities by establishing core requirements in the proposed rule, and is designed to minimize and/or eliminate potential delays to implement additional measures if the facility exceeds the ambient lead standard.

PROPOSED RULE 1420.1

As discussed in more detail below, PR 1420.1 provides a comprehensive approach to addressing lead emissions from large lead-acid battery recyclers with the additional safeguard of a "Contingency" Compliance Plan. The proposed rule establishes core requirements, many of which are currently used at the affected lead facilities and takes into account the value that this industry provides in recycling lead. Core requirements for lead point sources are based on a facility-wide emission rate for the facility's lead point sources and are more stringent than the efficiency requirement under Rule 1420. Core requirements for fugitive lead sources include a comprehensive list of housekeeping and maintenance activities. The efficacy of controlling fugitive emissions, however, are in part based on the operator, such as how well sweeping activities are conducted, how carefully maintenance activities are implemented to contain fugitive dust emissions, etc. In addition, the proposed rule includes more frequent source testing, expanded monitoring network, and increased sampling and monitoring requirements than Rule 1420. In addition, PR 1420.1 provides additional reporting requirements and public notification of key activities that occur at the facility.

Applicability

PR 1420.1 applies to lead-acid battery recycling facilities in the AQMD that processed more than 50,000 tons of lead a year. In the Basin, this industry currently processes an average of at least 300 tons of lead a day per facility. As discussed in Chapter 1, there are currently two facilities in the district that meet the applicability of the proposed rule. These facilities represent the largest stationary source of lead in emissions in the Basin. In addition, data from AQMD monitors in 2005 for Quemetco and as recent as 2009 for Exide have shown that monthly averages for these facilities have exceeded the new federal lead standard of 0.15 ug/m^3. In order to first target the largest lead sources, a minimum process limit of 50,000 tons of lead a year was set as the

threshold for rule applicability. The amount was derived by assuming an operating scenario of 5 days a week, 50 weeks a year, at 50 percent of the lowest current facility throughput limit for this industry in the Basin (~400 tons of lead/day) in order to account for years of decreased production. The language of "large" throughout the rule has been used solely to differentiate these facilities from those that are below the applicability threshold of the rule. Smaller lead-acid battery recycling facilities and other stationary lead sources are currently subject to Rule 1420. The AQMD staff will be amending Rule 1420 to address further reductions from these other lead sources.

Definitions

PR 1420.1 includes definitions of the following terms used in the proposed rule. Please refer to subdivision (c) of PR 1420.1 for the definitions:

- Agglomerating Furnace
- Ambient Air
- Battery Breaking Area
- Dryer
- Dryer Transition Piece
- Duct Section
- Emission Collection System
- Fugitive Lead-Dust
- Furnace and Refining/Casting Area
- Lead-acid Battery Recycling Facility
- Lead
- Lead Control Device
- Lead Point Source
- Leeward Wall
- Maintenance Activity
- Materials Storage and Handling Area
- Measurable Precipitation
- Partial Enclosure
- Process
- Renovation
- Sensitive Receptor
- Slag
- Smelting
- Smelting Furnace
- Total Enclosure
- Windward Wall

Requirements

Subdivision (d) of PR 1420.1 establishes key requirements. This subdivision includes requirements for the ambient air quality lead concentration, total enclosures, and lead point source controls.

Ambient Air Lead Concentration

Until January 1, 2012, large lead-acid battery recycling facilities will be required to meet an ambient air lead concentration standard of 1.5 µg/m^3 averaged over 30 days pursuant to Rule 1420. Beginning January 1, 2012, large lead-acid battery recycling facilities subject to PR 1420.1 will not be allowed to discharge into the atmosphere emissions which contribute to ambient air concentrations of lead that exceed 0.15 µg/m^3 averaged over any 30 consecutive days. Measurements recorded at any rule-required ambient air lead monitor, including those operated by the District that have been installed as source-oriented monitors for the facility, are subject to compliance with the standard. The averaging time for PR 1420.1 is shorter than that of the lead NAAQS with a more frequent sampling requirement of one sample in three days versus the NAAQS which requires one sample in six days.

Total Enclosures

Under PR 1420.1, no later than July 1, 2011, all areas used in the lead-acid battery recycling operation to process or store lead-containing material will be required to be located within a total enclosure vented to a lead control device. The areas may be enclosed individually or in groups. The intent of this requirement is to provide maximum containment and minimize fugitive lead-dust emissions generated in areas where processing, handling and storage of lead-containing materials occur. Areas for total enclosure will include:

- Battery breaking areas;
- Material storage and handling areas, excluding areas where unbroken lead-acid batteries and finished lead products are stored;
- Dryer and dryer areas including transition pieces, charging hoppers, chutes, and skip hoists conveying any lead-containing material;
- Smelting furnace and smelting furnace areas charging any lead-containing material;
- Agglomerating furnace and agglomerating furnace areas; and
- Refining and casting areas.

Facilities will be required to submit complete permit applications for all construction and necessary equipment for total enclosures within 30 days of the date of adoption for PR 1420.1. Construction is required to be completed within 180 days of receiving Permit to Construct approvals from the Executive Officer, or by July 1, 2011, whichever is earlier. In order to account for unexpected delays, facilities may be granted extensions to the compliance deadline date if they can demonstrate that all complete permit applications were timely filed, and that compliance deadlines cannot be met due to reasons beyond the facility's control. The request shall be submitted to the Executive Officer no less than 30 days before the compliance deadline date.

Areas with a total ground surface area of 10,000 square feet or more require a minimum of three digital differential pressure monitors: one at the leeward wall of the total enclosure, one at the windward wall, and one at an exterior wall that connects the leeward and windward wall at a location defined by the intersection of a perpendicular line between this wall and a straight line between the other two monitors in order to account for shifts in draft direction throughout the enclosure. Each total enclosure is required to be maintained at a negative pressure of at least 0.02 mm of Hg (0.011 inches H_2O) and an in-draft velocity of at least 300 feet per minute at any opening such as vents, windows, passages, doorways, bay doors, and roll-ups. For smaller

enclosures, at least one differential pressure monitor, continuously measuring the negative pressure of the total enclosure, is required to be installed on the leeward wall.

Digital differential pressure monitors must be capable of measuring and displaying negative pressure in the range of 0.01 to 0.2 mm Hg (0.005 to 0.11 inches H_2O) with a minimum accuracy of plus or minus 0.001 mm Hg (0.0005 inches H_2O). Digital differential pressure monitoring systems will also need to be equipped with a continuous strip chart recorder or electronic recorder approved by the Executive Officer. If the facility elects to use an electronic recorder, the recorder will need to be capable of writing data on a medium that is secure and tamper-proof. The recorded data needs to be readily accessible upon request by the Executive Officer. A copy of any software that is not readily available to the Executive Officer and required to access the recorded data, including all subsequent revisions, must be provided to the Executive Officer at no cost. If a device is needed to retrieve and provide a copy of such recorded data, the device must be maintained and operated at the facility.

Additionally, to ensure availability of data that may be useful in determining reasons for changes in ambient air lead concentrations during power outages, installation of a backup, uninterruptible power supply will be required on all digital differential pressure monitors. The amount of backup power supplied must be capable of sufficiently powering the monitors until processes and equipment at the facility can be safely brought down if the power outage is for a substantial period.

Lead Point Source Emission Controls

Lead point sources are defined by the proposed rule as any location where lead is emitted into the atmosphere from processes or equipment used in the lead-acid battery recycling operation that pass through a stack or vent designed to direct or control its exhaust flow. All lead emissions from lead point sources are required to be vented to an emissions collection system that ducts the entire gas stream to a lead control device. Proposed requirements for lead point source emission controls will be effective beginning July 1, 2011 in order to give facilities ample time to apply for permits and construct all necessary lead control devices. Requirements for the submittal of complete permit applications, construction, compliance deadlines, and extensions for lead control devices are the same as those specified earlier for total enclosures.

The total facility mass lead emission rate for all lead point sources shall not exceed 0.045 pounds of lead per hour, with a maximum emission rate for any single lead point source not to exceed 0.010 pounds of lead per hour. The facility mass emission rate for all lead point sources requires a greater control efficiency than the 99 percent control efficiency required under Rule 1420. The total facility mass emission rate standard of 0.045 pounds of lead per hour was selected based on modeling emissions from the facilities' existing lead emission point sources. The air dispersion modeling performed was consistent with the modeling in the most recent HRAs for each facility, and used updated stack parameters, meteorological data, and source test results for each point source. Calculations do not include background lead concentrations.

In order to meet the 0.15 $\mu g/m^3$ standard, considering stack emissions only, modeling resulted in an emission rate threshold of 0.0009 g/s or 0.007 lbs/hr for each stack for Exide and 0.002 g/s or

0.016 lbs/hr for each stack for Quemetco. The modeled emission rates do not ensure that the standard will be met, but provide a correlation between the stack emission rate and potential ambient lead concentration. Since overall facility emissions are a combination of lead point source emissions and fugitive emissions, to achieve the lead standard of 0.15 ug/m^3, the stack emissions must be sufficiently controlled to provide some margin for fugitive emissions. Using the most recent source tests from both facilities, the AQMD staff found that the emission rates from one of the affected facilities were not sufficiently controlled and through air dispersion modeling would exceed the 0.15 ug/m^3 lead standard.

Requiring a mass emission rate from all lead point sources of 0.045 pounds per hour ensures point sources are controlled to allow a 30 percent margin for fugitive emissions. It is difficult to determine if a 30 percent margin for fugitive emissions is sufficient because the fugitive emissions are based on how well the facility can implement housekeeping and containment provisions. Under PR 1420.1, if the facility approaches 0.12 ug/m^3 averaged over any 30 consecutive days, the facility is required to submit a Compliance Plan that will specify additional control strategies to further control lead point sources and fugitive emissions. If lead point sources are further controlled, this would provide a greater margin to work with for fugitive emissions. If additional housekeeping control strategies are added, this will further reduce fugitive emissions.

The maximum emission rate of 0.010 lb/hr for any individual lead control device was selected to adequately provide a protective limit for exposure to lead emissions and the ambient standard. Additionally, modeling of each individual stack for both facilities was conducted and results showed that a single stack emitting 0.01 lb/hr would not exceed 0.15 $\mu g/m^3$ standard at the fence line. Both the total facility and maximum individual stack emission rates, if exceeded, serve as a screening tool to indicate whether facilities need to reassess their lead control strategy to address other factors that affect the ambient air quality standard, such as controlling fugitive lead-dust emissions.

Facilities will also be required to install a secondary lead control device that controls lead emissions from the exhaust of the primary lead control device used for a dryer. Staff has reviewed historical source test data, modeling results, breakdown reports, and maintenance records for the dryer at one facility and has determined that it requires a secondary lead control device due to its high emissions. If the secondary lead control device for the dryer is fitted with dry filter media, it shall only be used to vent the primary lead control device for the dryer to ensure that breakdowns or malfunctions resulting from events such as filters or bags catching fire are appropriately attributed to and isolated to the dryer, avoiding impacts to the performance or emissions of other control devices. This will also ensure that emissions from other control devices are not affected if the secondary lead control device fails due to the failure of the primary lead control device for the dryer.

Furthermore, all filters and bags used in any lead control device are required to be rated by the manufacturer to achieve a minimum of 99.97% capture efficiency for 0.3 micron particles, or made of polytetrafluoroethylene membrane material. Any other material that is equally or more

effective for the control of lead emissions may be used so long as it is approved by the Executive Officer.

Staff reviewed source test results conducted for existing lead control devices at both facilities. Results indicate that existing lead control devices at one facility will meet both the proposed average and maximum emission rate limits. The other facility is anticipated to install a secondary lead control device on an existing baghouse controlling a dryer, and upgrade the filter media for a primary lead control device ventilating a total enclosure in order to comply with the proposed rule emission rate limits.

Compliance Plan

Compliance with PR 1420.1 is primarily based on an ambient concentration of lead at fence line monitors. The proposed rule is designed to control lead point source emissions and fugitive lead-dust emissions to achieve the ambient lead standard. Due to the uncertainties involved in controlling fugitive lead-dust, however, a Compliance Plan is proposed as a contingency if a facility approaches the ambient lead standard after all control strategies are implemented. The Compliance Plan is a "safety net" to ensure that the facility will achieve the 0.15 ug/m^3 lead standard. Beginning July 1, 2011, any facility that exceeds an ambient air lead concentration of 0.12 µg/m^3 averaged over any 30 consecutive days will be required to submit a Compliance Plan that identifies additional lead emission reduction measures to ensure that the ambient air quality concentration of 0.15 µg/m^3 is not exceeded. The purpose of this provision is to address those facilities that still may have difficulty demonstrating compliance with the ambient air lead concentration even after full implementation of PR 1420.1 requirements. The Compliance Plan will identify additional measures to be implemented if the 0.15 µg/m^3 concentration is exceeded. At a minimum, each Compliance Plan submittal shall include:

- A comprehensive list of additional short term and long term lead emission reduction measures to be implemented in the event that ambient concentrations of lead exceed 0.15 µg/m^3 averaged over any 30 consecutive days. Additional lead emission reduction measure must include, but are not limited to:
    - More stringent housekeeping measures, such as installation and maintenance of vehicle wet wash areas additional areas for cleaning, and increased cleaning frequencies;
    - Additional areas for total enclosures that may result in exceedances or are a significant source of lead emissions;
    - Modification to lead control devices,
    - Installation of multi-stage control devices;
    - Process changes including reduced throughput limits; and
    - Conditional curtailments including, at a minimum, information specifying the curtailed processes, process amounts, and length of curtailment;
- Locations within the facility and method(s) of implementation for each lead reduction measure; and
- An implementation schedule for each lead reduction measure if ambient air concentrations of lead exceed 0.15 µg/m^3 averaged over any 30 consecutive days, including a schedule for those that can be implemented immediately prior to plan approval.

Under the proposed rule, facilities are only required to submit a Compliance Plan if the ambient air concentration of lead is above 0.12 µg/m^3 averaged over any 30 consecutive days. Facilities will be required to notify the Executive Officer in writing within 72 hours of when the facility knew or should have known of exceeding an ambient air concentration of lead above 0.12 µg/m^3 averaged over any 30 consecutive days. Facilities will then be required to submit the Compliance Plan to the Executive Officer for review and approval within 30 calendar days of exceeding the ambient air lead concentration of 0.12 µg/m^3. The Executive Officer will notify the facility in writing whether the Compliance Plan is approved or disapproved. Determination of approval status will be based on, at a minimum, submittal of information that satisfies the criteria set forth in paragraph (g)(2) of the proposed rule.

If the Compliance Plan is disapproved, the owner or operator will be required to resubmit the Compliance Plan within 30 calendar days after notification of disapproval. The resubmitted Compliance Plan shall include any information necessary to address deficiencies identified in the disapproval letter. If the resubmitted Compliance Plan is denied, the operator or owner may appeal the denial by the Executive Officer to the Hearing Board under Rule 216 – Appeals and Rule 221 - Plans.

Lead reduction measures identified in the Compliance Plan will be implemented based on the schedule of the approved Compliance Plan. Implementation of measures will begin if ambient concentrations of lead exceed 0.15 µg/m^3 averaged over any 30 consecutive days. It should be noted that exceeding the 0.15 µg/m^3 standard will only trigger implementation of the Compliance Plan if it occurs before January 1, 2012. Thereafter, an exceedance of the standard will constitute a violation.

Housekeeping Requirements

The following housekeeping requirements are proposed to minimize fugitive lead-dust emissions. All requirements will be effective within 30 days of rule adoption.

- Clean by wet wash or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. This shall be done in a manner that does not generate fugitive lead-dust. The following areas shall be cleaned at the specified frequencies, unless located within a total enclosure vented to a lead control device:
    - Monthly cleanings of roof tops on structures $\leq$ 45 feet in height that house areas that are associated with the storage, handling or processing of lead-containing materials;
    - Quarterly cleanings of roof tops of structures > 45 feet in height that house areas associated with the storage, handling or processing of lead-containing materials;
    - Weekly cleanings of all areas where lead-containing wastes generated from housekeeping activities are stored, disposed of, recovered or recycled; and
    - Initiate immediate cleaning after any maintenance activity or event, including, but not limited to, process upsets or equipment malfunction that causes deposition of lead-containing materials onto any of the above areas.
- Monthly structural integrity inspections of any structures that house, contain, or control lead emission points or fugitive lead-dust emissions.

- Storage or processing of any lead-acid battery that is cracked or leaking upon receipt at the facility.
- Encapsulation (paving, asphalting, etc.) of all facility grounds for the purpose of providing a surface that accommodates ease of cleaning.
- Removal of weather caps on any stack that is a lead emissions source.
- Storage of all materials capable of generating any amount of fugitive lead-dust in sealed, leak-proof containers, unless located within a total enclosure. Examples of materials include slag, spent filters used in lead control devices, and lead-containing waste generated from housekeeping requirements.
- Transport of all materials capable of generating any amount of fugitive lead-dust emissions within closed conveyor systems or in sealed, leak-proof containers, unless conducted within a total enclosure.
- Surface impoundment pond cleanings.
- Facility grounds cleaning using onsite mobile vacuum sweepers.

Surface Impoundment Cleaning

The proposed rule requires cleanings of surface impoundment ponds or reservoirs. These ponds are typically exposed to the atmosphere and used to hold storm water and spent water used for washing down areas or objects that may contain fugitive-lead dust. These holding areas pose the potential for release of lead to the atmosphere when they are drained or when water evaporates. This provision will require facilities to remove any lead-containing material, including sludge, from the entire surface area of any surface impoundment pond or reservoir within 24 hours after the water level is equal to or less than one inch at any point above the bottom of the pond or reservoir. Surfaces shall be washed down in a manner that does not generate fugitive lead-dust weekly thereafter until used again for holding water.

Onsite Mobile Vacuum Sweepers

Another proposed requirement intended to reduce fugitive lead-dust emissions is periodic facility sweepings using onsite mobile vacuum sweepers or vacuums equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. Facilities will be required to vacuum sweep all facility areas subject to vehicle and foot traffic with a vacuum or an onsite mobile vacuum sweeper that is in compliance with District Rule 1186. Vacuum sweeping will be required three times each day, occurring at least once per operating shift with each event not less than four hours apart. Additionally, any accidents, mishaps and/or process upsets occurring in the aforementioned areas that result in the deposition of lead-containing material or dust shall be vacuum swept immediately, no later than one hour after occurrence. Further, sweeping will not be required on any day where the onsite measured rain amount is greater than 0.01 inches in any 24-hour calendar day. Facilities may use locally recorded and reported measured rain amounts.

Maintenance Activity

For purposes of the proposed rule, maintenance activity is defined as any of the following activities conducted outside of a total enclosure that generates fugitive lead-dust:

- Building construction, renovation, or demolition;

- Replacement or repair of refractory, filter bags, or any internal or external part of equipment used to process, handle, or control lead-containing materials;
- Replacement of any duct section used to convey lead-containing exhaust;
- Metal cutting or welding that penetrates the metal structure of any equipment used to process lead-containing material, and its associated components, such that lead dust within the internal structure or its components can become fugitive lead-dust; or
- Resurfacing, repair, or removal of ground, pavement, concrete, or asphalt.

Upon adoption of the rule, the owner or operator of a large lead-acid battery recycling facility will be required to conduct any maintenance activity that is not done in a total enclosure, inside a negative air containment enclosure that is vented to a permitted negative air machine equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. The negative air containment shall enclose all affected areas where the potential for fugitive lead-dust generation exists. If the maintenance activity cannot be conducted in a negative air containment enclosure due to physical constraints, limited accessibility, or safety issues when constructing or operating the enclosure, the facility will be required to conduct the activity under the following conditions:

- In a partial enclosure, barring conditions posing physical constraints, limited accessibility, or safety issues;
- Using wet suppression or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles, at locations where the potential to generate fugitive lead-dust exists prior to conducting and upon completion of the maintenance activity. Wet suppression or vacuuming will also be required during the maintenance activity barring safety issues;
- In conjunction with sample collections at ambient air monitors for every day that maintenance activity is occurring; and
- Maintenance activity conducted outside a negative enclosure must cease immediately if instantaneous wind speeds are 25 miles per hour or greater.

All lead-contaminated equipment and materials used for any maintenance activity requires immediate cleaning after completion of work, by wet wash or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. Facilities will also be required to notify the public regarding specific types of maintenance activity (see below in *Notifications to the Public*).

Ambient Air Monitoring and Sampling Requirements

Under PR 1420.1, each facility will be required to collect and analyze ambient air lead samples to determine compliance with the ambient air quality lead concentration standard of PR 1420.1. Prior to January 1, 2011, facilities will be required to conduct ambient air monitoring and sampling pursuant to Rule 1420. No later than January 1, 2011, facilities shall conduct ambient air monitoring and sampling as follows:

- Collect samples from a minimum of four sampling sites approved by the Executive Officer, at locations that are based on maximum expected ground level lead concentrations at or beyond the property line of the facility.

  - Locations are to be determined by air dispersion modeling calculations approved by the Executive Officer and emission estimates from all lead point sources and fugitive lead-dust sources. Other factors to be considered when determining sampling locations include, but are not limited to, population exposure and seasonal meteorology.
  - Sampling sites at the property line may be located just inside the fence line on facility property if logistical constraints preclude placement outside the fence line at the point of maximum expected ground level lead concentrations.
  - One or more of the four sampling sites may be required by the Executive Officer to be at locations that are not based on maximum impact, and that are instead at locations representative of upwind or background concentrations. A minimum of one of the four sampling sites, however, will be required to be based on maximum impact.
- Collect 24-hour, midnight-to-midnight, samples at all sites for 30 consecutive days from the date of initial sampling, followed by one 24-hour, midnight-to-midnight, sample collected at least once every three calendar days, on a schedule and frequency approved by the Executive Officer;
- Submit collected samples to a laboratory approved under the SCAQMD Laboratory Approval Program for analysis within three calendar days of collection and provide duplicate samples to the District upon request by the Executive Officer; and
- Calculate 30-day average ambient lead concentrations for individual 24 hour samples within 15 calendar days of the end of the calendar month.

Facilities will also be required to continuously monitor wind speed and direction for the ambient air quality monitoring system at all times to supplement data analysis of samples collected. Only personnel approved by the Executive Officer will be allowed to conduct ambient air quality monitoring, and sampling equipment shall be operated and maintained in accordance with U.S. EPA-referenced methods.

Cleaning activities, such as wet washing and misting, that result in damage or biases to samples collected, will not be allowed within 10 meters of any sampling site required by the rule. Additionally, all ambient air quality monitoring systems will be required to be equipped with a backup, uninterruptible power supply for use during a power outage. The backup power supplied must be sufficient to power the monitors until processes and equipment at the facility can be safely brought down.

Facilities will be required to collect samples at least once every three days. Current Rule 1420 requires at least one sample to be collected every six days, however, approvals of Rule 1420 ambient air monitoring plans over the past years have required facilities to sample at frequencies proposed in PR 1420.1. Staff believes that sampling every three days provides sufficient information to accurately reflect the ambient air concentrations at the facility during normal operations. The AQMD staff agrees that if the facility does see a spike, that more frequent sampling should be implemented as discussed below. Community members commented that sampling once every three days does not account for fluctuations in throughput and feel that a daily sampling would provide for a more comprehensive look regarding ambient air lead

concentrations. Based on historical monitoring data, in most cases exceedances have been due to housekeeping or maintenance activities and were not related to throughput fluctuations. As discussed under "Housekeeping Requirements," PR 1420.1 includes a number of requirements to address these potential emissions spikes.

On and after January 1, 2012, facilities that exceed an ambient air lead concentration of 0.15 $\mu g/m^3$ averaged over any 30 consecutive days, measured at any fence line monitor required by the rule, will be required to increase ambient air monitoring and sampling to a daily frequency. Daily ambient air monitoring and sampling will be required to begin no later than three calendar days of the time the facility knew or should have known of the exceedance. Daily monitoring and sampling will be required to be conducted for a period of sixty consecutive days at each sampling site that measured an exceedance. Any subsequent exceedance at a monitor that measured an exceedance shall require restarting the 60 consecutive-day period.

Any existing ambient air monitoring network currently in use for Rule 1420 may be used for compliance with PR 1420.1 so long as all rule requirements have been met.

Source Tests

The proposed rule will require annual source tests for all lead control devices in order to demonstrate compliance with the facility total lead mass emission rate standard of 0.045 lb/hr, and the maximum individual stack lead emission rate standard of 0.01 lb/hr. Initial source tests for new and modified lead control devices with an initial start-up date on or after the adoption date of the proposed rule will be required within 60 days of initial start-up. Existing lead control devices in operation before the adoption date of the rule will require a source test no later than six months after adoption of the rule. An existing source test, for existing lead control devices, conducted on or after January 1, 2009 may be used as the initial source test as long as the test:

- Is the most recent conducted since January 1, 2009;
- Demonstrated compliance with the applicable control standard;
- Is representative of the method to control emissions currently in use; and
- Was conducted using applicable and approved test methods.

The rule lists the following applicable test methods:

- SCAQMD Method 12.1;
- CARB Methods 12 and 436; and
- EPA Method 12.

Use of an alternative or equivalent test method will be allowed as long as it is approved in writing by the Executive Officer, CARB, and the U.S. EPA. Facilities will be required to submit a pre-test protocol to the Executive Officer at least 60 calendar days prior to conducting the source test. Notification to the Executive Officer in writing shall also be required one week prior to conducting the source test.

The proposed rule provides an incentive for lead control devices that demonstrate exemplary lead emission rate source test results. If the results of the most recent source test for a single lead point source control device indicate emissions of 0.0025 pounds of lead per hour or less, the next

test for that lead control device may be performed within 24 months after the date of the most recent test.

New Facilities

Under PR 1420.1, any new facility that begins construction or operations on or after rule adoption shall not be located in an area that is zoned for residential or mixed use. In addition, any new facility shall not be located within 1,000 feet from the property line of a sensitive receptor, a school under construction, park, or any area that is zoned for residential or mixed use. A siting provision for new facilities is proposed to avoid the possibility of high lead exposure for nearby residences and sensitive receptors from any new lead-acid battery recycling facility. This provision was included in PR 1420.1 due to the persistent nature of lead and the potential for lead particle accumulation over time. Individual events of small amounts of lead emitted by the facility may not trigger non-attainment status with the new lead NAAQS, however, chronic, cumulative lead exposure is a concern.

Recordkeeping

PR 1420.1 will require records indicating amounts of lead-containing material processed at the facilities to be maintained by the facility. Examples of records include purchase records, usage records, results of lead content analysis, or other AQMD-approved verification to indicate processing amounts. Records for all rule-required housekeeping, maintenance activity, ambient air lead monitoring, lead control device inspection and maintenance, and unplanned shutdowns of any smelting furnaces must also be maintained. All records shall be maintained for five years and maintained onsite for at least two years.

Reporting

Ambient Air Monitoring

Under the proposed rule, facilities will be required to submit reports for monthly ambient air monitoring results for lead and wind data measured at each sampling location on a monthly basis. Reports must be submitted starting no later than January 1, 2011 and must include the results of individual 24-hour samples and 30-day averages for each day within the reporting period. In addition, any exceedance of the ambient air quality concentration shall be reported to the Executive Officer (1-800-CUT-SMOG) within 24 hours of receipt of completed sample analysis, followed by a written report to the Executive Officer no later than three calendar days after the notification.

Shutdown and Turnarounds

PR 1420.1 requires notifications to the Executive Officer and the public of planned and unplanned shutdowns. Planned shutdown of any smelting furnace, battery breaker, or lead control device that results in lead emissions shall be reported to the Executive Officer by calling 1-800-CUT-SMOG at least ten days prior to shutdown. Unplanned shutdown of any lead control device shall be notified to the Executive Officer by calling 1-800-CUT-SMOG within 1 hour of shutdown. The notification shall include the associated processes or equipment vented by the shutdown lead control device. For both shutdowns above, a written notification shall also be made to the Executive Officer no later than three calendar days after the shutdown has occurred. Provisions for public notifications are described below.

Maintenance Activity

Under PR 1420.1 facilities will be required to notify the Executive Officer at least ten days prior to the beginning of any maintenance activity that is conducted routinely on a monthly or less frequent basis. Notification information shall include a description of the activity including dates, times, name of person(s) conducting the activity, and specific locations at the facility where activities will be conducted. A description of lead abatement procedures that will be used to minimize lead emissions is also required. For the purpose of the proposed rule, maintenance activity means any maintenance activity defined in paragraph (c)(15) that is conducted outside a total enclosure and generates fugitive-lead dust as recognized by the Executive Officer. Below is a list of specific types of activities that require a notification if the potential for fugitive-lead dust generation exists:

- Building construction, renovation, or demolition;
- Replacement or repair of refractory, filter bags, or any internal or external part of equipment used to process or handle lead containing materials;
- Replacement of any duct section used to convey lead-containing exhaust;
- Metal cutting or welding that penetrates the metal structure of any equipment used to process lead-containing material; or
- Resurfacing, repair, or removal of ground, pavement, concrete, or asphalt.

Provisions for public notifications of these activities are described below.

Notifications to the Public

Through comments received at working group meetings for this rule, residents in close proximity to PR 1420.1 facilities have expressed their concern for the lack of awareness of various activities conducted at the plant that have the potential to result in increased ambient lead concentrations. Community members have requested that information be made available to them so that they can safely plan outdoor activities.

In response to these concerns, PR 1420.1 requires facilities to provide notifications to the public through a facility contact or pre-recorded notification center that is accessible 24 hours a day, 7 days a week, or by another method approved by the Executive Officer that informs the public when the facility will be conducting the specific activities. The facility will be required to install a sign displaying the phone number for the contact or the pre-recorded notification center that is visible to the public. In addition, the facility is required to send notifications via electronic mail. The AQMD staff will provide a list of people who would receive the electronic mail. Facility representatives have asked if information can be placed on their website. This approach would be acceptable provided the sign includes the website information.

The timing of the notifications is similar to notification requirements that are required for the Executive Officer. PR 1420.1 also specifies the type of information that must be included in the notification such as the date, time, location, and description of the activity. PR 1420.1 requires that notification to the public be provided for the following activities:

- Roof washings;
- Resurfacing, repair, or removal of ground, pavement, concrete, or asphalt that are located outside of a total enclosure and generate fugitive lead-dust;

- Building construction, renovation, or demolition conducted outside of a total enclosure and generates fugitive lead-dust;
- Planned shutdowns or turnarounds of any smelting furnace, battery breaker, or lead control device that will result in lead emissions; or
- Unplanned shutdowns of any lead control device.

Initial Facility Status Report

Under PR 1420.1, no later than January 1, 2011, existing facilities will be required to submit an Initial Facility Status Report. Minimum information required in the report is specified in Appendix 1 of the proposed rule. Below is a summary of required information:

- General facility information (name, address, contact number);
- Worker and sensitive receptor locations with respect to the facility;
- Facility building parameters;
- Description of the lead processes at the facility;
- For all three calendar years dating back from the adoption of the rule:
  - ✓ Annual amounts of all lead-containing materials processed;
  - ✓ Maximum and average daily and monthly operating schedules;
  - ✓ Maximum and average daily and monthly lead-processing rates for all equipment and processes;
  - ✓ Maximum and average daily and annual lead emissions;
- Engineering drawings, calculations, or other methodology to demonstrate compliance with emission standards; total enclosures; ambient air lead monitoring and concentrations; and source tests;
- Intended source test dates for all lead control devices; and
- The name, title, and signature of the responsible official certifying the report.

Ongoing Facility Status Report

Facilities will be required to update the Executive Officer of facility status and changes through submittal of an Ongoing Facility Status Report under PR 1420.1. Reports will be due every year on or before February 1st and shall include information covering the preceding calendar year. Minimum information required in the report is specified in Appendix 2 of the proposed rule. Below is a summary of required information:

- ✓ General facility information (name, address, contact number);
- ✓ Quantities of lead-containing materials processed;
- ✓ Maximum and average daily and monthly lead-processing rates from all equipment and processes;
- ✓ Maximum and average daily and annual emissions of lead from all emission points and fugitive lead-dust sources;
- ✓ Description of changes in worker and sensitive receptor locations and distances since the previous reporting period;
- ✓ Description of changes in monitoring, processes, or controls since the previous reporting period; and
- ✓ The name, title, and signature of the responsible official certifying the report.

CHAPTER 3: IMPACT ASSESSMENT

INTRODUCTION

Various potential sources of lead emissions within the Basin were evaluated in order to plan strategies for attainment with the 2008 NAAQS. Staff has conducted an analysis of lead-emitting sources that may contribute to non-attainment status with the new lead NAAQS. Measurements taken at AQMD's monitoring network for ambient air lead concentrations were also reviewed for years 2007 through 2010, along with an analysis of lead emissions using multiple data sources including AQMD's AER program, permitting data, and compliance data for years 2005 through 2007. Additional information from AQMD's AB2588 air toxics program, including results of historical and current source test reports, were also included in the evaluation. Based on the analysis, the lead-acid battery recycling industry was identified as the largest source of lead emissions in the AQMD and is the industry affected by PR 1420.1.

Historical AQMD compliance data indicates that some exceedances of ambient air quality concentrations for lead have been related to fugitive lead-dust emissions from partially controlled emission points, process upsets, and minimal housekeeping practices at large lead-acid battery recycling facilities. PR 1420.1 requirements for total enclosures of all major lead recovery and storage processes along with enhanced housekeeping practices are expected to achieve reductions in fugitive lead-dust emissions and consequently reduce ambient air lead concentrations resulting from large lead-acid battery recycling facilities.

IMPACT ASSESSMENT FOR PROPOSED RULE 1420.1

A technical analysis of the impacts of requirements for facilities subject to PR 1420.1 was conducted to evaluate potential economic and environmental impacts of PR 1420.1. The impact analysis was based on compliance with requirements proposed to achieve attainment with the 2008 NAAQS for lead.

Implementation of PR 1420.1 will reduce lead point source and fugitive emissions from lead-acid battery recycling facilities. PR 1420.1 will result in a reduction in lead point source emissions through requirements for lead point source emission rates, installation of secondary controls on dryers, and use of specific filters/bags in lead control devices. Based on emission rates from the most recent source tests, implementation of PR 1420.1 will reduce overall facility lead emissions from point sources at Exide. PR 1420.1 is not expected to result in additional reductions to lead point source emissions at Quemetco since the most recent source tests for its lead control devices show they are well below the facility lead emission rate of 0.045 lbs/hour. However, proposed emission rates of the rule will require maintenance at these levels. Reductions of fugitive lead emission are expected at both facilities through PR 1420.1 housekeeping requirements and total enclosures, however, they are difficult to quantify due to the nature of these types of emissions, the types of control strategies that are used, and the manner and frequencies in which housekeeping is conducted. Ultimately facilities will be required to meet a new ambient air quality standard of 0.15 $\mu g/m^3$, which is tenfold lower than the previous standard.

Implementation of PR 1420.1 would result in a net environmental benefit due to the further reduction of lead exposure and associated health benefits. However, potential cost and

environmental impacts may occur in association with the installation of air pollution control devices and implementation of other measures to control lead emissions.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to California Environmental Quality Act (CEQA) Guidelines §15252 and AQMD Rule 110, the AQMD has prepared an Environmental Assessment (EA) for PR 1420.1. The Draft EA was released for a 30-day public review and comment period beginning April 27, 2010 and ending May 26, 2010. No comments were received.

Subsequent to the public circulation of the Draft EA for proposed project, PR 1420.1 was modified as follows:

- Removal of 99 percent control efficiency compliance option for lead control devices
- Addition of total facility lead emission rate and maximum individual lead control device emission rate (pounds per hour)
- Addition to use specific filters/bags in lead control devices
- Addition of secondary lead controls on the dryer
- Removal of vehicle wet wash area requirement
- Public notifications for:
    - Unplanned and planned shutdowns/turnarounds of specific equipment
    - Specific types of maintenance activity

The modifications were analyzed and AQMD staff concluded that recirculation was not necessary per CEQA Guidelines §15073.5, because the modifications were determined not to be a substantial revision (i.e., a new, avoidable significant effect that requires mitigation measure or project revisions to reduce the effect to insignificance or that project effects cannot be reduced to insignificant and new measures or project revisions are required). Recirculation is not required, because mitigation is not required; the modifications were not a response to written or verbal comments on the proposed effects identified in the Draft EA; modifications were not required by CEQA, and do not create new significant environmental effects, and it is not necessary to mitigate an avoidable significant effect; and new information added to the proposed project makes insignificant modifications to the Draft EA.

SOCIOECONOMIC ASSESSMENT

PR 1420.1 will incorporate the latest amendments to the federal NAAQS for Lead, as adopted by the U.S. EPA on October 15, 2008. PR 1420.1 would also propose additional provisions beyond the NAAQS which include total enclosures, detailed housekeeping requirements, increased monitoring, and periodic emissions testing of add-on air pollution control devices. The total annual cost for both facilities to comply with PR 1420.1 is estimated at $0.41 million for the first year, and $0.32 million annually thereafter. The socioeconomic assessment will be made available to the public at least 30 days prior to the Public Hearing and will be included as part of the Public Hearing package.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

Necessity

A need exists to adopt Proposed Rule 1420.1 in order to 1) implement the more stringent National Ambient Air Quality Standard for lead set by the U.S. EPA adopted October 15, 2008, 2) impose requirements intended to reduce lead emissions from the source category that has caused non-attainment designation of the Los Angeles County portions of the Basin, and 3) to protect public health by reducing cancer risk and other health effects from exposure to lead emissions pursuant to California Health and Safety Code Sections 39669.5 and 44390 through 44394.

Authority

The AQMD Governing Board has authority to adopt Proposed Rule 1420.1 pursuant to the California Health and Safety Code Sections 39002, 39650 et. seq., 39669.5, 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, 41700, 41706, 44365, and 44390 through 44394.

Clarity

PR 1420.1 is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

Consistency

PR 1420.1 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication

PR 1420.1 will not impose the same requirements as any existing state or federal regulations, other than implementing the NAAQS for lead. The requirements of PR 1420.1 are in addition to Rule 1420. The proposed rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the AQMD.

Reference

By adopting PR 1420.1, the AQMD Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 40001 (rules to achieve and maintain ambient air quality standards), 41700 (nuisance), 41706(b) (emission standards for lead compounds from non-vehicular sources), Federal Clean Air Act Section 112 (Hazardous Air Pollutants), and the 2008 National Ambient Air Quality Standards for Lead.

Problem

Prior to adoption of a rule or regulation that reduces criteria pollutants, H&S Code 40001(c) requires districts to determine that there is a problem that the proposed rule or regulation will alleviate and that the rule or regulation will promote the attainment or maintenance of state or federal ambient air quality standards. It has been determined that lead-acid battery recycling facilities will have a problem meeting the 2008 NAAQS for lead if further strategies are not implemented to control lead emissions from their facilities. PR 1420.1 will help alleviate this problem and help ensure compliance with the 2008 NAAQS for lead.

Rule Adoption Relative to Cost-effectiveness

Health and Safety Code Section 40922 requires that a cost-effectiveness ranking of available and proposed control measures is to be assessed for plans prepared pursuant to and Health and Safety Code, Part 3, Chapter 10. PR 1420.1 is not a control measure in the 2007 Air Quality Management Plan (AQMP) and thus, was not ranked by cost-effectiveness relative to other AQMP control measures in the 2007 AQMP. Furthermore, pursuant to Health and Safety Code Section 40910, cost-effectiveness in terms of dollars per ton of pollutant reduced is only applicable to rules regulating ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide and does not apply to toxic air contaminants.

Incremental Cost-effectiveness

Health and Safety Code Section 40920.6 requires an incremental cost effectiveness analysis for Best Available Retrofit Control Technology (BARCT) rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SOx, NOx, and their precursors. Since the proposed rule applies to lead, the incremental cost effectiveness analysis requirement does not apply. Furthermore, PR 1420.1 is not a BARCT rule, but rather is intended to bring the AQMD into compliance with the federal NAAQS.

AQMP and Legal Mandates

PR 1420.1 is not a measure in the AQMP. PR 1420.1 is an air toxic rule that would implement the requirements of the U.S. EPA's NAAQS for lead and reduce cancer risk.

COMPARATIVE ANALYSIS

Health and Safety Code section 40727.2 requires a comparative analysis of the proposed rule with any rules and regulations applicable to the same source. This comparative analysis does not include the state ambient air quality standard because it is still at 1.5 $\mu g/m^3$.

Table 3-1: Comparison of PR 1420.1 with District Rule 1420, the 2008 Lead NAAQS, and the NESHAP for Secondary Lead Smelters

Rule Element	PR 1420.1	District Rule 1420	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
Applicability	Lead-acid battery recycling facilities that	Facilities that use or process lead-containing	All States	Secondary lead smelters

Rule Element	PR 1420.1	District Rule 1420	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
	have ever processed more than 50,000 lead-tons/year	materials		
Ambient Air Quality Standard	On and after January 1, 2012, meet 0.15 µg/m^3 averaged over 30 consecutive days	1.5 µg/m^3 averaged over 30 days	0.15 µg/m^3: - 3-month average - Demonstrated over a 3-year period.	None
Total Enclosures	Total enclosures for main areas where processing, handling and storage of lead-containing materials occur	None[1]	None[2]	Total or partial enclosures for: - Smelting furnace and dryer charging hoppers, chutes, and skip hoists; - Smelting furnace lead taps, and molds during tapping; - Refining kettles; - Dryer transition pieces; and - Agglomerating furnace product taps
Emission Standard and Requirements for Lead Control Devices	- Total facility mass emission rate of 0.045 lbs/hr of lead from all lead point sources; maximum emission rate of 0.010 lb/hr of lead for any individual lead	99% control efficiency for particulate matter; 98% control efficiency for lead	None	Concentration of 2.0 mg/dscm

[1] Total enclosures have been required through Compliance Plans and legal actions.

[2] Effective date for the NAAQS is five years after final attainment designation.

Rule Element	PR 1420.1	District Rule 1420	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
	point source - Use of filters or bags that are rated by the manufacturer to achieve 99.97 percent control efficiency on 0.3 micron particles or made of PTFE membrane material - Secondary lead controls on dryer			
Compliance Plan	Only required if a facility exceeds 0.12 µg/m^3; 30 consecutive day avg.; Identifies additional lead control measures beyond the rule; Begin implementation if facility exceeds 0.15 µg/m^3; 30 consecutive day avg.	Specifies general facility information[3]	None	None
Ambient Air Monitoring Requirements	- Minimum of four monitors at facility locations approved by the Executive Officer - Samples collected at least once every	- Minimum of two monitors at facility locations approved by the Executive Officer - Samples collected every six days	For states, a minimum of: - One source-oriented monitor at all facilities emitting 1.0 tons of lead/year; and - One non-	None

[3] Additional facility requirements have been added through revised Compliance Plans.

Rule Element	PR 1420.1	District Rule 1420	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
	three days - Results reported monthly - Daily sampling if 0.15 µg/m^3 is exceeded after January 1, 2012	- Results reported quarterly	source-oriented monitor in urban areas with a population of at least 500,000 people - Samples collected every six days	
Housekeeping Requirements	Prescribed requirements for cleaning frequencies of specific areas; maintenance activity; building integrity inspections; storage and transport of lead-containing materials; onsite mobile sweeping; and surface impoundment cleanings	Requirements for storage of dust-forming material; weekly cleaning of surfaces subject to vehicular or foot traffic; and storage, disposal, recovery, and recycling of lead or lead-containing wastes generated from housekeeping activities[4]	None	Periodic wash down of plant roadways (lower frequency than PR 1420.1); wet suppression of battery breaking area storage piles; vehicle wet washing of vehicles exiting the materials handling and storage areas
Reporting Requirements	- Ambient air lead and wind monitoring; - Shutdown, turnaround, and maintenance activity reports; - Public notifications for specific shutdown and maintenance activity; - Initial Facility	Ambient air lead and wind monitoring for any lead-processing facility that is required or elects to do ambient air monitoring	For states: - State Implementation Plan submittal; - Periodic emissions reports from stationary source monitors; - Ambient air quality data and associated assurance data	- Lead control alarm/failure reports including fugitive dust control measures performed during failures

[4] Additional housekeeping measures have been required through revised Compliance Plans and legal actions.

Rule Element	PR 1420.1	District Rule 1420	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
	Status Reports - Ongoing Facility Status Reports			

REFERENCES

REFERENCES

"Air Quality Criteria Document for Lead, Volumes I-II," Environmental Protection Agency, Office of Research and Development, October 2006.

"Lead in Air," Environmental Protection Agency, (*http//www.epa.gov/air/lead.html*), June 12, 2009.

"National Ambient Air Quality Standards for Lead; Final Rule," 40 CFR Parts 50, 51, 53, and 58, Environmental Protection Agency, November 2008.

"National Emission Standards for Hazardous Air Pollutants (Secondary Lead Smelters), Notice of Proposed Rule; Notice of Public Hearing," 59 Federal Register 110, Environmental Protection Agency, June 1994.

"Prioritization of Toxic Air Contaminants Under the Children's Health Act," Environmental Protection Agency, Office of Environmental Health Hazard Assessment, October 2001.

"Secondary Lead Smelter eTool," United States Department of Labor, Occupational Safety and Health Administration, *(http://www.osha.gov/SLTC/etools/leadsmelter/index.html).*

"Secondary Lead Smelting Background Information Document for Promulgated Standards," Environmental Protection Agency, Office of Air Quality Planning and Standards, June 1995.

"South Coast Air Quality Management District Lead (Pb) Monitoring Network Plan," South Coast Air Quality Management District, July 2009.

"Staff Report for Proposed Rule 1420: Emissions Standards for Lead," South Coast Air Quality Management District, August 1992.